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*Annual Report [with  
Accompanying Documents].*

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State of New York — Department of Agriculture.

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FIFTH ANNUAL REPORT  
OF THE  
METEOROLOGICAL BUREAU  
AND  
WEATHER SERVICE  
OF THE  
STATE OF NEW YORK.  
1893.

Under the State Department of Agriculture and in  
Co-operation with the U. S. Weather Bureau.

CREATED AND ORGANIZED UNDER THE LAWS OF THE STATE OF  
NEW YORK — (CHAPTER 148, LAWS OF 1889).

REORGANIZED AND PLACED UNDER THE DEPARTMENT OF AGRICULTURE — (CHAPTER 338, LAWS OF 1893).

CENTRAL OFFICE AT CORNELL UNIVERSITY, ITHACA, N. Y.

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TRANSMITTED TO THE LEGISLATURE FEBRUARY 5, 1894.

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ALBANY:  
JAMES B. LYON, STATE PRINTER.  
1894.

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## TABLE OF CONTENTS.

SECTION 1.—Report of the Director, . . . . .	7- 19
SECTION 2.—Financial Statement.. . . .	22- 24
SECTION 3.—Monthly Meteorological Reports, . . . . .	27-269
SECTION 4.—Annual Meteorological Report, . . . . .	273-289
SECTION 5.—Statistics of Stations and Crop Report, . . . . .	292-306
SECTION 6.—Description of Stations, . . . . .	309-343
The Climate of New York State, . . . . .	345-448
Index.	
Climatic Charts.	

## ERRATA.

Page 359—In note to Table 2, read "Section VI" for "Section IV."

" 277—The chart referred to in the note fronts p. 352.

" 391—Sixth line from bottom, read "p. 380-381" for "p. 53,"

" 397—The heading of Table 11 should be, "Variability of Temperature in New York State."



# STATE OF NEW YORK.

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No. 100.

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## IN ASSEMBLY,

FEBRUARY 5, 1894.

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### REPORT OF THE DIRECTOR

OF THE

State Meteorological Bureau and Weather Service.

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STATE OF NEW YORK:

DEPARTMENT OF AGRICULTURE,  
COMMISSIONER'S OFFICE, ALBANY, *February 5, 1894.* }

Hon. GEORGE R. MALBY,

*Speaker of the Assembly:*

SIR.—I herewith transmit to the Legislature the fifth annual report of the Director of the State Meteorological Bureau and Weather Service, created by and organized under chapter 148 of the Laws of 1889, and reorganized and placed under the Department of Agriculture (chapter 338, Laws of 1893).

Very respectfully.

FRED. C. SCHRAUB,

*Commissioner of Agriculture.*



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SECTION 1.

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REPORT OF THE DIRECTOR  
OF THE  
NEW YORK WEATHER BUREAU.

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# REPORT.

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*To the Honorable the Commissioner of Agriculture of the State of New York :*

Sir.—I have the honor of transmitting to you an account of the important work done by this bureau during the fiscal year 1892-1893.

The system of business procedure is such as to secure checks upon all the work, which is carefully distributed among the members of the bureau, thus insuring efficiency and economy, and making easy the reference to any data that may be required.

I have only words of commendation for the faithfulness of the employees of the bureau, whose work is difficult and always demanding exacting attention.

The entire merit of this report upon the history and present condition of the service rests with E. T. Turner, C. E., who, as meteorologist of the bureau, presents through you to the Legislature a report very creditable to the State of New York, and which will command the attention and respect of similar services at home and abroad.

This report contains: First, a general account of the condition of the bureau and its work during the year; second, a financial statement; third, tables and text showing the results of meteorological observation at all stations for each month and the year, illustrated by charts of temperature and rainfall; fourth, descriptions of stations, lists of observers and other miscellaneous exhibits.

In view of the transfer of the bureau, in April last, from the charge of a special State commission to the Department of Agriculture, it appears pertinent to introduce this report by a brief account of the origin and previous work of the service.

Historical.—The first attempt to predict the courses of general storm movements in the United States was made prior to 1850 by the Smithsonian Institute, which secured telegraphic reports upon temperature, atmospheric pressure and rainfall from a number of stations east of the Mississippi river. The work was, therefore, a matter of private enterprise; but after the close of the civil war, interest in the subject became more general, and in 1870 the United States government made an appropriation for the establishment of a National Weather Service, placing the work in the hands of the Signal Service, under the direction of General Myer, who had for some time taken an active interest in the subject. Under his control the service was vigorously developed, and at the time of his death, in 1880, had been brought substantially into its present form.

General Hazen, who succeeded General Myer, was convinced that the Signal Service system, while well adapted to the forecasting of storms, was wholly insufficient for the thorough investigation of the climatic features of the entire country, and that the co-operation of the several States must be obtained. In a circular letter, widely distributed, in April, 1881, the functions of a State weather service are thus explained: "Experience has shown that in many questions relating to agricultural and other interests, more minute details (than those furnished by signal service stations) are needed, such as can only be obtained by having at least one report from every county, and this extension of the work must at present devolve upon individual States.

"The object of a State weather service should be to observe and utilize every feature of the weather that affects the prosperity of the inhabitants of the States as to crops, health, life, etc., omitting, perhaps, only those few items provided for by the general government at Washington, such as cold wave and storm predictions. The State service is therefore a plan for gathering and utilizing local climatic data, and eventually it will define precisely the localities most favorable and most unfavorable to special crops, diseases, etc." In illustration of these statements, it may be said that the data furnished by five National Weather Bureau stations at the borders of New York State give scarcely

a hint at the most important climatic conditions existing in the interior, as may be clearly seen by inspecting the charts of temperature and rainfall accompanying this report, which are derived mainly from the data of the State Bureau.

Several of the States at once proceeded to adopt the suggestions of the letter, and by 1883 services were in operation in Ohio, New Jersey, Indiana, Illinois, Michigan, Iowa, Missouri, Kansas and Tennessee.

The present director fully appreciated the special need for climatic knowledge in a State having the commercial and agricultural rank of New York. Efforts were made at Albany for three consecutive years, to obtain the aid of the State in this work; but, failing to accomplish this, he decided in 1888, to establish mainly by private enterprise, a provisional service which should demonstrate the practicability and usefulness of the plans submitted to the Legislature.

By correspondence and otherwise, several persons in various parts of the State became sufficiently interested in the work, to make, gratuitously, three daily observations upon weather, temperature and rainfall; some of these observers providing their own instruments, while others were loaned by the signal service; and in addition to this aid, the chief signal officer detailed an assistant to the Central Office at Ithaca. The intimate relation of the weather service to agricultural interests was fully understood at the beginning, and before State aid was secured, a corps of voluntary observers was reporting weekly upon the crops in many sections of the State, and a summary of the results, published by duplicating process, was distributed as widely as circumstances permitted.

The results of the year's work, thus carried on under difficulties, were such as to convince the Legislature of its value, and in 1889 a law was passed establishing the "State Meteorological Bureau and Weather Service;" New York thus taking its place among thirty or more States already provided with similar organizations. The affairs of this Bureau were administered by three commissioners (including the director), all of whom served without compensation; and an appropriation of

\$4,500 was made for the equipment and maintenance of the service, and for clerical aid at the Central office. Mr. E. T. Turner, C. E., who became directly interested in the service in 1888, gave his entire time to the work, for three years, without compensation.

Instruments were at once purchased, tested and issued to persons willing to undertake their use; the law providing that no salaries be paid to observers. The general plan of work adopted by the Commission, as published in the first annual report (1889), was as follows: "Your Commissioners will undertake the serious business of a careful study of the climates and agricultural products of the State, comparing them, so far as may be in their power, with those of other parts of the world, for the purpose of exhibiting the possible varieties of production of our soil, and perhaps contribute to the introduction of new and profitable cultures." "The publication of reliable weekly bulletins giving the exact condition of the crops in every county of the State will be one of the most directly useful labors of the Bureau; and in connection with it, the publication of such results as may, by their nature, benefit the agricultural and commercial interests of the State, as provided by law." The collections of observations and records necessary to accomplish the objects thus set forth have progressed without interruption during the regime of the Commission; nor has the recent transfer of the Bureau to the Agricultural Department required any material change in a scheme of work which has always maintained the closest possible relation to the farming interests of the State. Observations collected at many stations for the past five years, with scarcely the loss of a day, in addition to a vast amount of work done since 1874, already furnish material for a fairly accurate statement of the temperature conditions of a considerable portion of the State; while for rainfall, a somewhat more extended period of observation must precede an attempt to strike average or normal values. The progress made in climatic investigation will be referred to later.

Volunteer stations of the bureau.—The number of stations belonging to the State Bureau during the past year and equipped

with both thermometers and a rain gauge, is seventy-five, representing fifty counties. In addition, reports upon both temperature and rainfall are rendered to the central office each month by six stations of the National Bureau, and by five military posts, making a total of eighty-six regularly equipped meteorological stations. The number of temperature stations in most of the thickly populated counties of the State is now sufficient for the purposes of the service, and no attempt has been made to establish new stations in such counties, excepting to replace observers who have been obliged to discontinue observations. Six regular stations have thus returned their instruments during the year: White Plains, Westchester county; Hammondsport, Steuben county; Newfield Summit, Tompkins county; Bisby Lodge and Utica,\* Oneida county; and Axton Lake, Franklin county. Six new stations have also been established, viz.: Whitehall, Washington county; Port Henry, Essex county; Varysburg, Wyoming county; Wappinger's Falls, Dutchess county; Stillwater, Saratoga county; and Saranac Lake, Clinton county.

It is regretted that the northern and eastern mountain regions of the State are not yet adequately provided with observers. Every effort has been made to obtain records from these important meteorological regions of the State, and no less than nine stations have been equipped with instruments in the Adirondack region alone, since the Bureau was established. Of this number four are now rendering monthly reports, viz.: Ampersand and Saranac Lake, Franklin county; Lyon Mountain, Clinton county; and Number Four, Lewis county. The observers at the remaining stations have not been able to carry on the work, and several of them have returned their instruments. But, while it is very difficult to find suitable observers in these thinly populated regions, experience in other similar districts has proven that with persistent effort competent volunteers may finally be found.

Five stations, provided with barometers by the State, have rendered monthly reports on atmospheric pressure during this

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\*By the recent death of Mr. Thomas Burt of Utica, the State has lost one of its most experienced and competent observers, and no person has yet been found to continue the work at that point.



year, in addition to the observations upon this element furnished by six stations of the National Bureau. The uniform distribution of pressure, as compared with that of temperature and rainfall, renders it unnecessary and undesirable to increase the number of barometer stations.

Recognizing the importance of securing accurate data upon the direction, force and duration of the winds in various regions of the State, the commissioners in 1891 placed anemometers and registering apparatus at ten prominent and representative points widely distributed over the State. Experience during two years has shown that voluntary observers can not be expected nor asked to give the degree of care required by this complicated apparatus; and that the results obtained do not warrant the outlay necessary to maintain such records. The anemometers have, therefore, been recalled, and the electric batteries accompanying them are being put to use in operating the experimental plant at the central office. It is hoped that a more simple apparatus may be devised, which may come into general use among voluntary observers, since without such means, observation upon the winds must be more or less unsatisfactory.

The regular equipment of the stations in this State now consists of standard maximum and minimum thermometers, and a rain gauge. The thermometers are read at the close of each day, and thus the highest and lowest temperatures during the preceding twenty-four hours are found; also by adding the maximum and minimum readings, and dividing the sum by two, a close approximation is obtained to the true daily mean temperature, or the average of twenty-four hourly observations. In addition to these instruments, more than one-half of the stations are provided with two thermometers of the ordinary pattern, but of standard accuracy, which are observed three times each day, at 7 a. m., 2 p. m., and 9 p. m.: From the readings of one of these thermometers (the dry bulb, indicating the true air temperature), an approximation to the true daily mean is obtained even more close than that given by the maximum and minimum temperatures. The bulb of the second thermometer is kept moistened, and through the reduction of temperature caused by evaporation

at its surface, a measure of the humidity and dew point of the air is obtained.

The method of deducing daily temperatures from the maximum and minimum readings is now employed at all stations of the National and State services, and thus a uniform basis of comparison is secured throughout the United States. In this service, the use of the tri-daily system is also encouraged, since it affords a valuable check upon the accuracy of the work, and, beside, tests the conditions under which the instruments are exposed. The depth of water in the rain-gauge is measured to hundredths of an inch at the close of each rainy day; and the duration and amount of fall in each shower is also noted by the great proportion of observers, thus furnishing the most valuable of all information used in questions of drainage and engineering—the rate of rainfall. During the past year the maximum daily rates for each month at all stations have for the first time been published in monthly reports.

At nearly all stations the condition of the sky during the day is noted. Most remarkable differences in average cloudiness are found within the limits of this State, the amount in the Great Lake region, for example, exceeding that near the Atlantic coast by about forty per cent; and there are cases in which stations only a few miles apart differ widely in the amount of sunshine which they receive. Evidently this subject, with its vital importance to agriculture, requires the best efforts of the Bureau in collecting and reducing data. It is expected to publish preliminary cloud charts from data now at hand, in the near future.

Special rainfall stations.—Owing to the irregular manner in which rainfall is distributed, it has been considered advisable to establish stations for the measurement of this element alone, and accordingly, four stations have been equipped with rain-gauges only, during the year. These stations are: Castile, Wyoming county; Booneville, Oneida county; Bovina Center, Delaware county; and Scottsville, Monroe county. Unfortunately the State has lost this year several stations which have hitherto contributed excellent and continuous records, owing to a change of

residence by observers, or for other reasons. The stations thus lost are Schodack Depot, Rensselaer county; McLean, Tompkins county; Bisby Lodge, Herkimer county; Dunkirk, Chautauqua county, and Batavia, Genesee county. The total number of stations now equipped for rainfall observations is 102, and it is expected to increase this number considerably during the year.

Inspection of stations.—The laws creating both the meteorological Bureau and the present Weather Bureau require the supervision of the meteorological stations established. A large proportion of the stations now existing were visited and inspected by the director or officers of the bureau, during the three years past, as explained in previous reports of the commissioners. The absence of the Director in Europe during the early part of this year and the time required to equip the Central Station for experimental work in accordance with the law, have compelled the clerical force to confine their work entirely to this office. Inspections of stations have hitherto been found to add materially to the efficiency of the service, and during the coming year it is intended to visit all new stations and as many of those previously established as time and the available appropriation will permit.

Crop reports.—In 1893 a crop bulletin was issued from this office each week, from April eleventh to October third. This bulletin contained the statements of seventy-eight reporters distributed through forty-eight counties, with a resume of the condition of the principal crops in each region and for the State. The statements of correspondents embraced all of the principal staple crops raised in this State, and the effects of current weather upon each; also competent observers were found to represent regions devoted to important special cultures, such as the grape vineyard districts near the lakes, and the hop-growing regions of central and northern New York. A brief summary was appended to the bulletin, containing statements from the bulletin of the National Weather Bureau concerning the condition of those crops in other States which may affect New York markets. Six hundred and fifty copies of this bulletin are printed weekly, an increased issue

being required during the past year to meet 150 special applications. During 1892 acknowledgments were received from over 100 newspapers in this State which publish all or a portion of the bulletins, thus giving them a very wide circulation.

The information derived from reports of correspondents is made the basis of a telegram sent each Monday morning to the Bureau at Washington; and which, with similar reports from other States, is embodied in the weekly Crop Bulletin of the National Bureau.

Dissemination of weather forecasts.—The demand for weather forecasts and cold-wave warnings depends upon two factors. First, the accuracy of the predictions made by the National Bureau; and, secondly, upon the regularity and care with which the warning flags or other signals are displayed by those receiving them. The prejudice which appears to exist against the government forecasts in some communities is probably due, in the majority of cases, to the second rather than to the first of these causes, since careful estimates show the percentages of error in the predictions to be very far within those of even the most expert guessing. Seaport towns and other localities where successful forecasts are most essential are precisely those in which the present system obtains the greatest favor, any curtailment of telegrams in such cases being strenuously opposed. On the other hand, one may find in some interior villages that flags are to be discovered only after a prolonged search, and that few persons are aware that any regular telegrams are received. The proper display of forecasts can be superintended by the National Bureau only at its own regular stations; and it must continue to be an important function of each State service to supervise the display of signals at all volunteer stations within its limits. In the case of this bureau, much of the time of the clerk detailed by the National Bureau is employed in correspondence with the displaymen of New York State, 170 in number, and in ascertaining from the communities interested whether or not the forecasts give the beneficial results of which they are capable. Every person receiving the telegraphic messages reports monthly to this

office the character of the messages, the time when they were received, and whether or not the proper display of signals was made.

During the year 1893, forty sets of signal flags and twenty single cold wave flags were furnished to displaymen by this bureau upon request, and proper correspondence proving that they were needed. Without doubt it will ultimately be a sound policy to allow each community to prove its appreciation of the forecasts by purchasing the necessary flags; but in some of the cases mentioned, it seemed best to depart from this rule, since no displays had been previously made, and their utility was practically unknown. Generally, but one set of flags should be furnished to any community, which is expected to replace them when worn out.

The expense of the telegrams sent to the displaymen of this State has now very nearly reached the limit allowed by the appropriation of the National Bureau, although this was very generously increased during 1892. This year, however, a plan has been devised by which a number of small villages remote from telegraphic communication may be reached without expense. By the co-operation of the postmasters in fifteen towns, centrally located, telegraphic messages are copied upon receipt, and forwarded at once over stage routes to as many of the outlying villages as possible; the total number reached by the present arrangement being 173. The necessary franked cards, etc., have but recently been received at this office from Washington, and forwarded to the various sub-stations, so that the success of this effort can not yet be reported upon.

Finally, it is apparently beyond question that weather predictions are more often verified in some sections of New York than in others. This means, without doubt, that the various meteorological influences to which the State is subject are not yet fully known; and to determine them with accuracy is a work which must devolve upon the State Bureau. Certainly, in this climate, no one factor is of greater importance to agriculture and commerce than a successful system of weather forecasts, widely disseminated.

Work at the central office.—The transfer of the bureau to the Agricultural Department during the year has required no important changes either in the work or the expert force at the central office. The amount of routine business is constantly increasing, and now absorbs nearly all the time of the two officers of the State, and of the assistant detailed by the national bureau. Two thousand meteorological and crop reports have been received, corrected and reduced during the year; 40,000 pieces of mail have been sent out; and a very voluminous correspondence has been conducted, much of it requiring a careful preparation of data. Monthly reports have been regularly prepared, embracing a general discussion of the weather conditions, tabulated statements for all stations and regions, and charts of temperature and rainfall. A bulletin was also issued weekly during the crop season, as already described.

The maintenance of volunteer stations receives constant attention; instruments frequently requiring repair or adjustment, while those which are unavoidably broken must be replaced. The apparatus at the central station has demanded an unusual share of attention during the year, owing to changes in the thermometer exposure made necessary by building operations on the campus; also, the new instruments, described elsewhere, have been mounted and put in operation, much special apparatus being designed and constructed in the course of the work.

The collation of data furnished by fifty special observers of thunder-storms during the summer has been completed, but sufficient time has not been found to properly discuss the results. A thorough classification and criticism of the records of temperature and rainfall on file at the central office was completed early in the year, the results of which work will be found, in part, in the accompanying report on the Climate of New York.

Equipment of the Central Station.—The provision for meteorological observation and experiment at the Central Station, as specified in the law creating the bureau, has heretofore been held subordinate to other work in the interests of the service at large; it being deemed best to thoroughly equip and organize the latter

before entering new fields of experiment. The need for such work is, however, pressing; and hence, while in Europe early in the year, the director took the opportunity to examine many foreign observatories and their methods, and to purchase a portion of the apparatus which gave the best results. A large amount of money was saved to the State by this means, since the prices were far below any obtainable in this country, while as State property, the purchase was not subject to import duty. The apparatus has, for the most part, been mounted ready for operation with the beginning of 1894.

A list of new instruments includes the following: An actinometer, recording the duration and intensity of sunshine; an evaporimeter, showing the rate at which moisture is absorbed by the air; a psychrometer and hygrometer, recording continuously the water-vapor held in the air; a self-recording rain-gauge; and complete apparatus for registering all the details of air circulation and winds, giving the total daily travel, the velocity during heavy gusts, and the direction and force of vertical air currents. The wind-measuring apparatus is exposed at the summit of a high tower on the University campus, a location which is believed to be exceptionally favorable.

In co-operation with the State Experimental Station, special attention will be given to determine soil temperatures, rates of evaporation from different surfaces, and to such other matters as have been found to yield practically useful results.

The standard observations upon pressure, temperature, rainfall and other meteorological elements have been continued during the past year at the Central station.

Co-operation of the State and National Bureaus.—The close relation of the State and National bureaus have been frequently touched upon in the preceding pages. Without the aid of the Chief Signal Officer in 1888, the establishment of the provisional service would have been extremely difficult; and since that time the aid of the National Bureau has very materially diminished the cost of operating the large scheme of work embraced in all branches of the State service. The detail of a competent officer

of the National service as assistant to the director has been continued; the duties of this position having been effectively discharged by Mr. R. M. Hardinge during the past three years. The great bulk of mail matter issued by this bureau is franked by the government, and much of the stationery is also furnished, thus saving the State several hundreds of dollars annually.

As stated in the letter of General Hazen, already quoted, the relation of State and National services is properly reciprocal; and while each has its special field of work, the results obtained are freely interchanged. In this respect, a broad policy on the part of the commonwealth of New York is specified by the act creating the State bureau; and it has always been the aim of the present director to use our appropriation to the greatest advantage of both organizations, and to make our material equipment and the work at the Central Office contribute as far as possible to the furtherance of the plans of the National Bureau.

Very respectfully,

E. A. FUERTES,

*Director.*





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**SECTION 2.**

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**FINANCIAL.**

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**Exhibiting Expenditures of the Bureau During  
the Fiscal Year 1892-1893.**

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## FINANCIAL STATEMENT FOR THE FISCAL YEAR, 1892-1893.

DATE.	Order number.	To whom issued.	For what purpose.	Amounts.	Total.
1892.					
October 3	95	Crosscup & West Engraving Co.	August charts.	.....	\$27 50
October 9	96	Gregory & Apgar	Printing July report.	.....	59 00
October 4	97	Priest & Benjamin	Printing crop bulletin, vol. iv, No. 26.	.....	6 25
October 4	98	E. T. Turner	Services for September.	.....	100 00
October 4	99	W. O. Kerr	Services for September.	\$100 00	
October 4	99	W. O. Kerr	Cablegram	1 96	
October 4	99	W. O. Kerr	Expressage	2 20	
October 11	100	Priest & Benjamin	Printing crop bulletin, vol. iv, No. 27.	.....	104 15
October 20	101	Schneider Bros	Two dozen rain gauge rules	.....	6 25
October 25	102	H. J. Green	One aneroid bar meter and case.	.....	5 00
October 25	103	Ginn & Company	Vol. IX, American Meteorological Journal	.....	21 20
October 25	104	Holmes Hollister	Forty-two packing boxes	.....	5 00
October 25	105	N. Y. & Pa. Tel. & Telephone Co.	Telephone service to October 1	.....	5 00
October 25	106	M. M. Richard Ferres	Sundry meteorological instruments	*	9 00
October 29	107	James Seaman	Material and work for shelters	.....	29 94
November 1	108	E. T. Turner	Services for October.	.....	100 00
November 1	109	W. O. Kerr	Expressage	\$100 00	
November 1	109	W. O. Kerr	Expressage	1 45	
November 1	109	W. O. Kerr	Expenses inspecting stations	19 25	
November 10	110	Andrus & Church	Seven sheets cross-section paper.	.....	120 70
November 17	111	Crosscup & West Engraving Co.	September charts.	.....	27 50
November 21	112	Gregory & Apgar	Printing August report	.....	59 00
November 28	113	Crosscup & West Engraving Co.	October charts.	.....	27 50
November 28	114	Gregory & Apgar	Printing September report	.....	59 00
December 1	115	E. T. Turner	Services for November.	.....	100 00
December 1	116	W. O. Kerr	Expressage	\$1 96	
December 1	116	W. O. Kerr	Services for November.	100 00	
December 14	117	Gregory & Apgar	Printing October report	.....	101 25
December 15	118	Crosscup & West Engraving Co.	November charts.	.....	59 00
December 16	119	Gregory & Apgar	Printing November report	.....	27 50
December 16	120	Gregory & Apgar	Printing errata slips	.....	59 50
December 17	121	N. Y. & Pa. Tel. & Telephone Co.	Telephone service to January 1.	.....	9 00
December 17	122	Priest & Benjamin	Printing circular letter	.....	9 00
December 27	123	Andrus & Church	Two bottles ink	.....	3 50
December 29	124	National Express Co.	Transportation.	.....	9 10

## STATE METEOROLOGICAL BUREAU.

23

December 31	128	W. O. Kerr	Services for December	100 00
December 31	129	W. O. Kerr	Expressage	1 40
December 31	130	W. O. Kerr	Paid J. H. Hyma, carding	4 10
December 31	131	E. T. Turner	Services for December	100 00
1898.				
January 25	1	Jas. W. Queen & Co	Twenty-three and one-half pounds thermograph paper	81 00
January 28	2	Simeon Smith	Expenses inspecting stations	17 44
January 31	3	E. T. Turner	Services for January	100 00
January 31	4	W. O. Kerr	Services for January and expenses	108 80
January 10	5	Crosscup & West Engraving Co.	December and annual charts	83 80
February 28	6	Crosscup & West Engraving Co.	January charts and changes in base map	80 80
February 28	7	E. T. Turner	Services for February	102 85
February 28	8	W. O. Kerr	Services for February and expenses	102 85
February 13	9	Gregory & Appgar	Printing December report and Annual Supplement	119 62
March 15	10	Gregory & Appgar	Printing January report	59 40
March 16	11	Andrus & Church	Office supplies	1 35
March 22	12	Andrus & Church	Nucleage	1 85
March 22	13	Andrus & Church	February charts	37 50
March 22	14	Crosscup & West Engraving Co.	Printing February report	58 00
March 31	15	Gregory & Appgar	Telephone service to April first	9 00
March 31	16	N. Y. & Pa. Tel. & Telephone Co.	Transportation	4 35
March 31	17	Nation Express Co.	Services for March and expenses	108 12
April 8	18	W. O. Kerr	Office supplies	1 10
April 16	19	Andrus & Church	March charts	37 50
April 14	20	Crosscup & West Engraving Co.	Printing crop bulletin, vol. V, No. 1	6 75
April 14	21	Priest & Benjamin	Printing crop bulletin No. 2	6 75
April 17	22	Priest & Benjamin	Printing crop bulletin No. 3	6 75
April 24	23	Priest & Benjamin	Printing March report	58 00
April 28	24	Gregory & Appgar	Printing crop bulletin No. 4	6 75
May 2	25	Priest & Benjamin	Services for April	100 00
May 5	26	E. T. Turner	Services for April and expenses	102 85
May 5	27	W. O. Kerr	Printing crop bulletin No. 5	6 75
May 9	28	Priest & Benjamin	Printing crop bulletin No. 6	6 75
May 10	29	Crosscup & West Engraving Co.	April charts	7 00
May 17	30	Priest & Benjamin	Printing crop bulletin No. 7	2 50
May 23	31	Priest & Benjamin	Printing crop bulletin No. 8	100 00
May 31	32	Priest & Benjamin	Printing circular letter	101 15
June 2	33	E. T. Turner	Services for May	7 25
June 2	34	W. O. Kerr	Printing crop bulletin No. 9	7 25
June 6	35	Priest & Benjamin	Printing April report	68 00
June 6	36	Gregory & Appgar	Printing crop bulletin No. 10	7 25
June 13	37	Priest & Benjamin	Printing fifty copies mailing list	10 50
June 19	38	N. Y. & Pa. Tel. & Telephone Co.	Telephone service to July first	9 00
June 19	39	Priest & Benjamin	Printing crop bulletin No. 11	7 25
June 20	40	Priest & Benjamin	Printing crop bulletin No. 12	7 25
June 27	41	Priest & Benjamin	May charts	27 50
June 30	42	Crosscup & West Engraving Co.	Services for June	100 00
July 1	43	E. T. Turner		

**\* Order not filled.**

## FINANCIAL STATEMENT FOR THE FISCAL YEAR 1892-1893 — (Concluded).

DATE.	Order number.	To whom issued.	For what purpose.	Amount.	Total.
1893.					
July 1	44	W. O. Kerr	Services for June	.....	\$100 00
July 4	45	W. O. Kerr	Expressage	.....	2 45
July 5	46	Priest & Benjamin	Printing crop bulletin No. 13	.....	7 25
July 8	47	Ginn & Company	Vol. X American Met. Journal	.....	3 00
July 11	48	Priest & Benjamin	Printing crop bulletin No. 14	.....	7 25
July 13	49	Gregory & Apgar	Printing May report	.....	59 00
July 17	50	Crosscup & West Engraving Co.	June charts	.....	37 50
July 18	51	Priest & Benjamin	Printing crop bulletin No. 15	.....	7 25
July 18	52	Tice & Lynch	Meteorological instruments from Richard Freres	.....	1,322 66
July 25	53	Priest & Benjamin	Printing crop bulletin No. 16	.....	7 25
July 31	54	E. T. Turner	Services for July	.....	100 00
July 31	55	W. O. Kerr	Services for July	.....	100 00
August 1	56	Priest & Benjamin	Printing crop bulletin No. 17	.....	7 25
August 8	57	Priest & Benjamin	Printing crop bulletin No. 18	.....	7 25
August 11	58	Gregory & Apgar	Printing June report	.....	59 00
August 12	59	N. Y. & Pa. Tel. & Telephone Co.	Telephone service to October first	.....	9 00
August 15	60	Priest & Benjamin	Printing crop bulletin No. 19	.....	7 25
August 22	61	Priest & Benjamin	Printing crop bulletin No. 20	.....	7 25
August 29	62	Priest & Benjamin	Printing crop bulletin No. 21	.....	7 25
August 30	63	E. T. Turner	Services for August	.....	100 00
September 1	64	W. O. Kerr	Services for August and expenses	.....	102 10
September 1	65	E. T. Turner	Expenses attending weather service convention	.....	49 50
September 5	66	Priest & Benjamin	Printing crop bulletin No. 22	.....	7 25
September 7	67	Crosscup & West Engraving Co.	July charts	.....	37 50
September 9	68	Andrus & Church	One thousand letter heads	.....	5 25
September 12	69	Priest & Benjamin	Printing crop bulletin No. 23	.....	7 25
September 19	70	Priest & Benjamin	Printing crop bulletin No. 24	.....	7 50
September 26	71	Priest & Benjamin	Printing crop bulletin No. 25	.....	7 50
September 27	72	E. T. Turner	Services for September	.....	100 00
October 2	73	W. O. Kerr	Services for September	.....	100 00
October 3	74	Priest & Benjamin	Printing crop bulletin No. 26	.....	7 50
Total expenses incurred				.....	\$5,333 08
Disbursements on orders issued prior to October 1, 1892				.....	68 72
Unexpended balance, October 4, 1893				.....	3,919 36
Unexpended balance, October 1, 1892				.....	\$4,855 94
Legislative appropriation, session of 1893				.....	4,800 00
Accounts pending audit, October 4, 1893				.....	5 25
				.....	\$9,361 19

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## SECTION 3.

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# METEOROLOGICAL.

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TABLES AND MAPS GIVING FOR EACH MONTH OF 1893 :

1. DESCRIPTION OF THE PRINCIPAL FEATURES OF THE WEATHER FOR EACH MONTH, WITH NOTES UPON THE GROWTH AND CONDITION OF THE PRINCIPAL CROPS..
2. THE MEAN MONTHLY, MAXIMUM AND MINIMUM BAROMETRIC PRESSURE AND ITS RANGE ; THE RELATIVE HUMIDITY AND DEW POINT ; THE MEAN DAILY, MAXIMUM AND MINIMUM TEMPERATURE AND ITS RANGE ; THE APPEARANCE OF THE SKY ; THE TOTAL, GREATEST AND AVERAGE RAINFALL AND PREVAILING WINDS.
3. THE DAILY AND MONTHLY MEAN TEMPERATURES.
4. THE DAILY AND MONTHLY PRECIPITATION.
5. TEMPERATURE AND RAINFALL STATISTICS FOR NEW YORK STATE.
6. THE TEMPERATURE AND RAINFALL CHARTS.



## Meteorological Summary for January, 1893.

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The average atmospheric pressure (reduced to sea-level and 32 degrees Fahr.) for the State of New York during January was 29.96 inches. The highest barometer was 30.56 inches, at Albany, on the twenty-eighth; and the lowest was 29.07 inches, at Buffalo, on the first. The general distribution of pressure was quite uniform over this State, although considerable local divergencies are exhibited at individual stations. The average of the mean pressures at six stations of the national bureau was 0.13 inch below the normal value; the departures at all stations exceeding 0.12 inch.

The mean temperature of the State as derived from the records of seventy-eight stations was 15.0 degrees; the highest general daily mean being 33.8 degrees, on the twenty-ninth, and the lowest, 0.3 degrees below zero on the eleventh. The highest local monthly mean was 23.3 degrees, at New York city; and the lowest was 7.2 degrees at Malone. The maximum temperature recorded during the month was 55 degrees at Eden Centre on the twenty-ninth, and the lowest was 28 degrees below zero at Binghamton on the seventeenth. The mean monthly range of temperature for the State was 58 degrees; the greatest range being 77 degrees at Binghamton, and the least 46 degrees at Fort Niagara. The mean daily range was 15 degrees; the greatest daily range being 52 degrees at Madison barracks on the twenty-second, and the least 0.0 degrees at Plattsburgh barracks on the tenth. The mean temperatures for the various sections of the State were as follows: The western plateau, 15.9 degrees; the eastern plateau, 15.3 degrees; the northern plateau, 10.0 degrees; the coast region, 22.1 degrees; the Hudson valley, 17.1 degrees; the Mohawk valley, 14.2 degrees; the Champlain valley, 11.0 degrees; the St. Lawrence



valley, 9.7 degrees; the Great Lake region, 16.8 degrees; and the Central Lake region, 17.4 degrees. The average of the mean temperatures at twenty-seven stations possessing records for previous years was 7.5 degrees below the normal value. The month was the coldest January on record at the following stations, whose observations extend over the periods specified: Humphrey, eleven years; Waverly, twelve years; New York city, twenty-three years; Setauket, eight years; Honeymead Brook, ten years; Madison barracks, thirty-one years; Buffalo and Rochester, twenty-three years; Erie, Penn., twenty years; Ithaca, fifteen years. Colder Januarys occurred at Cooperstown in 1857, 1867 and 1875. It may be noted that all available records indicate that the coldest January in the Eastern States during the past 135 years or more occurred in 1857. The average temperature of that month was 19.6 degrees at Fort Columbus, New York harbor, and 10.3 degrees at Cooperstown.

The mean relative humidity was eighty per cent. The mean dew point was 12 degrees.

The average precipitation for the State was 2.16 inches of rain and melted snow. Over the southeastern counties and in restricted sections east of Lakes Erie and Ontario the precipitation ranged from 2 to 4 inches; while in the main portions of central and northern New York the amount was below 2 inches. The maximum local precipitation was 8.52 inches at Cherry Creek, Chautauqua county, and the minimum was 0.55 inch at Avon, Livingston county. A precipitation to equal or exceed 1.50 inches in twenty-four hours occurred on the first only, as follows: At Bedford, Westchester county, 2.03; at Boyd's Corners, Putnam county, 2.28; at Brentwood, L. I., 1.50 inches; at Carmel, Putnam county, 2.00 inches; at Minnewaska, Ulster county, 2.00 inches; at Port Jervis, 1.65 inches; and at Setauket, L. I., 1.60 inches. The total snowfall over the State averaged about 16 inches, being heaviest in Lewis county and vicinity, where it averaged about two feet, and least in the Central Lake region, where it averaged about 10 inches. The average precipitation at twenty-nine stations possessing records for previous years

was 0.51 inch below the normal amount. At Albany the deficiency was the greatest in twenty years.

The average number of days on which the precipitation amounted to 0.01 inch or more was 11.7. The number ranged from twenty to twenty-four in the vicinity of the great lakes, while in the eastern section and the region of the Atlantic coast, from ten to twelve rainy days were generally reported.

The average number of clear days was 5.5; of partly cloudy days, 10.2; and of cloudy days, 15.3. The mean cloudiness for the State was sixty-three per cent (overcast = 100 per cent. As usual, the maximum cloudiness obtained near the Great Lakes, and the minimum over the eastern part of the State.

The prevailing wind direction was from the west. The average total travel at six stations of the national bureau and at Ithaca was 8,094 miles; the travel being above the average values at all stations excepting Rochester.

Hail and sleet fell on the first, twenty-eighth, twenty-ninth and thirty-first.

Solar halos were observed on the tenth, fourteenth, eighteenth and thirtieth; and lunar halos on the second, fifth, twenty-fourth and thirty-first.

The data for this summary have been obtained from the records of sixty-seven Voluntary Observers, six stations of the National Bureau, five Military Posts, and twenty-three Special Rainfall Observers.

During January, the weather of New York was influenced by eight areas of high pressure and ten areas of low pressure; the latter number being about the average storm frequency in the vicinity of this State during January of previous years. The storms in general followed a more southerly course than usual from the first to the twentieth of the month; during which period three depressions passed over New York, one moved northward along the coast, one severe storm passed from Lake Ontario down the St. Lawrence Valley, a sixth depression dissipating west of this State, and a seventh passing south of its borders to the Atlantic coast. With one exception these storms were well

developed cyclones; but during the remainder of the month the energy of the depressions decreased; their paths also lying further northward than the preceding. The areas of high pressure during the first half of January in most cases passed over the Southern States to the Atlantic coast; but thereafter their general course was toward the northeastern States and the Canadian coast.

The first cyclone of the month passed over Lake Ontario and down the St. Lawrence valley on the first, giving high winds over the State, and a heavy rain, turning to sleet and snow in the rear of the storm. The effect of an area of high pressure north of the lakes was felt on the first and second in a cold wave, which was especially severe over the northern counties, causing the daily temperature to fall about 40 degrees at stations in the St. Lawrence valley. A severe storm which passed along the coast on the sixth, with a second disturbance traversing southern New York and Pennsylvania on the same day, gave a considerable snow fall in all but the northern section, where northerly winds, with fair and extremely cold weather prevailed. The strong cyclone which passed eastward along the northern border of the State on the ninth and tenth, caused a slight general rise of temperature, with a moderate snowfall and severe windy weather, especially in the region near the lakes.

The coldest weather of the month obtained between the ninth and eighteenth; the average temperature of the State being from ten to fifteen degrees below the normal during that period. A strongly developed cyclone passed over the southwestern part of the State, moving northward on reaching the coast; the accompanying snowfall being heaviest in the southwestern and southeastern counties. The cold weather which followed was prolonged by the eastward movement of a broad depression well to the southward of New York on the fourteenth and fifteenth. On the seventeenth an intense anticyclone passed from the central to the northeastern States, bringing cold and clear weather; the temperature rising rapidly, however, on the two days following; as the area passed southward along the coast, while the seventh

depression moved to the western border of the State and there dissipated. On the twenty-first the spreading and development of an area of high pressure over the Central States and Canada gave colder and clearing weather over New York, until the anticyclone moved southward before the eighth and ninth depressions of the month, which passed north of the State on the twenty-third and twenty-fifth, respectively; the resulting distribution of pressure giving southerly winds and much warmer weather in the State. The anticyclone of the southern coast again spread northward over the Atlantic States on the twenty-fifth and twenty-sixth, while a second "high" moved over the St. Lawrence valley region from the northwest; the two areas reducing the temperature to about the normal values. The last storm of January passed north of New York on the twenty-ninth, accompanied by a general precipitation, and a thawing of snow and ice in all regions of the State. The month closed with cold weather due to an anticyclone which passed from the Great Lakes over northern New York and Canada on the thirtieth and thirty-first.

## METEOROLOGICAL DATA

LOCATION OF STATIONS.			BAROMETER.						HUMIDITY.			TEMPERATURE.	
STATIONS.	County.	Elevation, feet.	Mean.	Highest.	Date	Lowest.	Date.	Monthly range.	Mean relative.	Dew point (degrees).	Mean of tri-daily observation.	Mean of maximum and minimum.	Highest.
<i>Western Plateau.</i>													
Alfred Centre	Allegany	1824	29.94	30.81	30	29.16	1	1.15				15.9	50
Angelica	"	1340									13.1	13.8	45
Friendship	"	1550										13.9	45
Humphrey	Cattaraugus	1950							84	13	15.8	15.9	45
Arkwright	Chautauqua	1260										16.1	45
Elmira	Chemung	863								18.7		18.7	
LeRoy	Genesee	888										15.8	46
Mt. Morris	Livingston	625										18.3	50
Lockport	Niagara	618										16.6	44
Victor	Ontario	650										17.4	50
Wedgewood	Schuyler	1350									15.0	15.9	47
Addison	Steuben	1000									17.8	17.4	47
South Canisteo	"	1480							83	11	15.1	15.6	50
Arcade	Wyoming	1557									12.3	13.0	42
Italy Hill	Yates	1650										14.5	43
<i>Eastern Plateau</i>													
Binghamton	Broome	870									15.7	15.3	49
Oxford	Chenango	1250										15.4	49
Cortland	Cortland	1120										14.3	43
South Kortright	Delaware	1700										16.0	42
Brookfield	Madison	1350							71	7	15.6	15.1	43
Middletown	Orange	660										17.0	46
Port Jervis	"	470							84	12		16.9	46
Cooperstown	Otsego	1300									14.2	13.9	45
New Lisbon	"	1234									15.2	15.4	45
Quaker Street	Schenectady	973										12.8	43
Perry City	Schuyler	1088									15.6	15.0	44
Waverly	Tioga	825									16.6	17.2	47
Newfield Summit	Tompkins	2000										15.0	43
Minnewaska	Ulster	1800									15.6	15.6	
<i>Northern Plateau.</i>													
Lyon Mountain	Clinton	1917										10.0	44
Keene Valley	Essex	1015										19.7	44
Ampersand	Franklin	1600	29.94	30.44	31	29.32	10	1.12			7.8	9.0	43
Hawatha House	Franklin												
Gloversville	Fulton	802									12.2	12.7	39
Blue Mountain Lake	Hamilton												
Bisby Lodge	Herkimer	1950											
Constableville	Lewis	1246									8.2	9.2	40
Lowville	"	900										10.1	44
Number Four	"	1571	29.99	30.49	30	29.35	10	1.14				9.1	41
Turin	"	1240										10.1	40
<i>Coast Region.</i>													
New York City	New York	164	29.98	30.51	28	29.24	10	1.27	71	15		22.1	52
Willels Point	Queens											23.3	52
Brentwood	Suffolk	75										22.7	50
Setauket	"	40							79	17	22.8	19.7	51
White Plains	Westchester	273										22.8	52
<i>Hudson Valley.</i>													
Albany	Albany	85	29.97	30.56	28	29.22	2	1.34	84	12		17.1	52
Lebanon Springs	Columbia	880										16.8	45
Honeymead Brook	Dutchess	450									15.6	14.6	46

## STATE METEOROLOGICAL BUREAU.

33

FOR JANUARY, 1893.

TEMPERATURE—(IN DEGREES FAHR.)						SKY.			PRECIPITATION—(INCHES.)					WIND.			
Date.	Lowest.	Date.	Monthly range.	Mean daily range.	Greatest daily range.	Date.	Least daily range.	Date.	Number of clear days.	No. of partly cloudy days.	Number of cloudy days.	Number of days on which 0.01 or more inches fell.	Total.	Greatest daily.	Average daily.	Total snow fall.	Prevailing direction.
29	-28	16	56	14	40	22	1	8	2.9	9.8	18.3	13.9	2.28	1.65	.073	28.0	N. W.
28	-10	10	55	13	35	10	10	5	5	5	12	19	2.44	1.65	.144	19.0	W.
27	-23	16	68	17	40	22	5	0	0	0	0	0	2.44	0.50	.079	9.8	S. W.
26	-17	18	62	17	40	22	5	0	0	0	0	0	1.16	0.087	0.087	14.8	W.
25	-8	16	53	18	38	26	8	10	0	6	25	15	2.82	0.46	.091	19.0	S. W.
24	-3	10	48	11	24	28	8	7	7	4	20	5	0.62	0.26	.020	9.0	N. W.
23	-7	c	53	19	32	28	4	2	1	9	21	18	3.95	0.50	.127	30.5	W.
22	-10	18	60	19	37	18	11	2	2	6	23	19	2.06	0.50	.066	17.0	W.
21	-5	11	49	12	28	28	4	7	0	12	23	10	1.30	0.30	.042	13.0	S. W.
20	-6	10	56	15	32	22	7	2	5	11	15	8	1.30	0.30	.042	13.0	W.
19	-9	10	56	18	32	26	8	8	2	17	12	16	2.23	0.72	.072	14.8	N. W.
18	-14	18	61	15	34	22	3	8	7	15	9	13	1.64	0.68	.053	11.3	N. W.
17	-12	d	62	17	37	26	4	21	6	7	18	19	2.96	1.10	.095	19.4	N. W.
16	-5	e	51	15	27	27	5	19	0	18	18	21	1.69	0.25	.055	14.4	N. W.
15	-8	11	51	13	25	10	6	2	0	0	0	0	0	0	0	0	0
14	-28	17	58	16	49	22	1	12	4.8	10.9	15.3	10.6	2.25	2.00	.073	14.8	N. W.
13	-28	17	77	17	36	17	7	5	4	14	13	10	2.42	0.50	.078	14.8	W.
12	-15	17	58	17	32	23	9	2	0	5	26	17	2.57	0.40	.083	18.5	W.
11	-12	17	54	12	25	10	4	20	4	0	0	14	1.54	0.51	.050	0	0
10	-14	18	62	18	32	18	10	13	0	0	0	4	1.27	0.62	.041	0	0
9	-9	16	52	15	31	1	6	13	0	18	13	10	1.92	0.52	.062	14.0	N. W.
8	-6	18	52	14	24	10	5	11	0	10	10	9	3.22	1.05	.106	20.5	W.
7	-12	f	58	16	25	9	8	8	8	15	8	8	3.57	1.65	.115	17.5	N. W.
6	-8	11	53	14	28	1	4	13	6	18	7	9	1.89	0.72	.061	9.0	W.
5	-13	16	58	16	29	1	7	5	8	12	16	11	1.65	0.66	.053	14.8	S. W.
4	-11	11	54	15	26	1	1	12	14	5	12	6	1.75	0.70	.056	8.0	N. W.
3	-14	17	58	15	34	22	4	20	0	9	22	19	1.75	0.40	.056	12.2	S. W.
2	-22	17	69	20	49	22	8	20	2	10	19	15	2.25	0.75	.073	16.6	W.
1	-3	c	61	16	32	28	7	20	0	0	0	6	3.45	2.00	.111	0	0
29	-23	11	61	17	44	10	6	ac	5.7	10.2	15.1	8.8	2.02	0.82	.065	0	0
28	-22	18	66	14	39	28	6	16	0	0	0	0	0	0	0	0	0
27	-20	11	63	19	30	8	7	16	15	6	10	4	0.63	0.30	.020	6.0	0
26	-11	22	50	17	34	22	8	20	3	10	18	8	1.32	0.30	.048	12.8	0
25	-11	22	50	17	34	22	8	20	3	10	18	8	1.64	0.58	.053	14.6	W.
24	-23	11	63	17	44	10	7	13	6	9	16	0	0	0	0	0	0
23	-18	g	62	19	35	8	7	13	5	10	16	9	2.29	0.75	.074	10.0	W.
22	-21	g	62	18	36	12	6	ad	1	14	16	11	2.46	0.59	.079	22.9	S.
21	-20	11	60	17	32	3	7	8	4	12	15	13	3.78	0.82	.122	0	N.
1	-12	22	55	14	38	22	2	5	10	3	10.0	10.0	3.26	1.60	.105	0	0
1	-1	11	51	12	25	1	5	27	6	14	11	12	3.56	0.96	.115	0	N. W.
1	-6	h	56	15	30	22	2	5	0	0	0	7	2.90	0.80	.063	14.0	N. E.
1	-12	22	63	19	38	22	9	15	17	4	10	9	8.50	1.50	.113	15.0	N. W.
1	-2	11	50	12	28	10	5	20	8	12	11	12	3.09	1.60	.100	17.0	W.
2	-19	18	59	18	38	21	5	ae	10.3	7.7	13.0	10.8	3.26	2.28	.105	0	0
2	-5	11	50	14	23	1	6	30	3	16	12	10	1.31	0.48	.042	0	N. W.
2	-13	18	59	18	29	18	8	bb	7	7	17	10	2.14	1.12	.069	10.5	W.
2	-13	16	62	18	28	23	8	15	4	15	12	13	2.69	1.43	.087	16.4	N.

## METEOROLOGICAL DATA

LOCATION OF STATIONS.			BAROMETER.						HUMIDITY.		TEMPERATURE.		
STATIONS.	County.	Elevation, feet.	Mean.	Highest.	Date.	Lowest.	Date.	Monthly range.	Mean relative.	Dew point (degrees).	Mean of tri-daily observations.	Mean of maximum and minimum.	Highest.
<i>Hud. Valley (Con).</i>													
Poughkeepsie .....	Dutchess .....	180 .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	15.7	51
West Point .....	Orange .....	167 .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	19.8	52
Boyd's Corners .....	Putnam .....	546 .....	.....	.....	.....	.....	.....	.....	.....	.....	19.2	*19.2	..
Carmel .....	Putnam .....	500 .....	.....	.....	.....	.....	.....	.....	.....	.....	17.4	17.4	50
Rondout .....	Ulster .....	150 .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	*17.5	42
Peekskill .....	Westchester .....	250 .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	..
<i>Mohawk Valley</i>													
Rome .....	Oneida .....	445 .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	14.2	45
Utica .....	.....	537 .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	13.4	44
												15.1	46
<i>Champlain Valley</i>													
Plattsburgh .....	Clinton .....	150 .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	11.0	48
Plattsburgh Barracks.	.....	125 .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	10.8	48
Saratoga .....	Saratoga .....	270 .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	..
Glens Falls .....	Warren .....	340 .....	.....	.....	.....	.....	.....	.....	.....	.....	11.1	11.3	39
Whitehall .....	Washington .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	..
<i>St. Lawrence Valley</i>													
Malone .....	Franklin .....	810 .....	.....	.....	.....	.....	.....	.....	.....	.....	7.7	9.7	49
Madison Barracks.	Jefferson .....	266 .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	7.2	46
Watertown .....	.....	486 .....	29.98	30.50	27	29.09	1	1.41	.....	.....	.....	11.7	49
												12.9	44
Canton .....	St. Lawrence .....	304 .....	.....	.....	.....	.....	.....	.....	.....	.....	8.8	9.1	45
North Hammond .....	.....	300 .....	.....	.....	.....	.....	.....	.....	.....	.....	9.8	10.8	42
Ogdensburg .....	" .....	258 .....	.....	.....	.....	.....	.....	.....	.....	.....	8.1	8.1	..
Potsdam .....	" .....	300 .....	.....	.....	.....	.....	.....	.....	.....	.....	7.6	8.2	45
<i>Great Lakes</i>													
Dunkirk .....	Chautauqua .....	590 .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	16.8	55
Buffalo .....	Erie .....	690 .....	29.95	30.40	30	29.07	1	1.33	79	12	.....	*17.4	45
Eden Centre .....	.....	690 .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	16.8	48
												15.4	55
Brockport .....	Monroe .....	520 .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	18.2	47
Rochester .....	.....	621 .....	29.97	30.48	27	29.10	1	1.38	82	13	.....	17.0	48
Fort Niagara .....	Niagara .....	263 .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	20.4	46
Hess Road Station .....	.....	330 .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	..
Baldwinsville .....	Onondaga .....	390 .....	.....	.....	.....	.....	.....	.....	.....	.....	16.7	15.9	46
Albion .....	Orleans .....	521 .....	.....	.....	.....	.....	.....	.....	.....	.....	15.9	*15.9	..
Oswego .....	Oswego .....	814 .....	29.95	30.50	27	29.13	1	1.27	84	12	.....	15.6	45
Palerino .....	Oswego .....	460 .....	.....	.....	.....	.....	.....	.....	.....	.....	14.4	14.1	43
Lyons .....	Wayne .....	407 .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	..
Erie, Pa. ....	Erie .....	681 .....	29.97	30.40	17	29.09	1	1.31	84	14	.....	18.0	51
<i>Central Lakes</i>													
Fleming .....	Cayuga .....	1000 .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	17.4	50
Geneva .....	Ontario .....	459 .....	.....	.....	.....	.....	.....	.....	.....	.....	16.4	17.3	48
Watkins .....	Schuyler .....	737 .....	.....	.....	.....	.....	.....	.....	.....	.....	18.2	18.2	48
											16.5	16.3	50
Romulus .....	Seneca .....	719 .....	.....	.....	.....	.....	.....	.....	80	11	.....	17.9	48
Hammondsport .....	Steuben .....	800 .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	..
Ithaca .....	Tompkins .....	840 .....	29.92	30.41	27	29.07	1	1.34	.....	.....	16.6	17.5	45
Mean .....			29.96	30.56	28	29.07	1	1.28	80	12	.....	15.0	55

(a) 28, 29; (b) 29, 30; (c) 10, 11; (d) 16, 17; (e) 10, 16; (f) 17, 18; (g) 11, 12; (h) 14, 18; (i) 17, 18, 22; (j) 8, 31; (u) 8, 29; (v) 4, 20; (w) 13, 15; (x) 19, 20; (y) 13, 14, 25; (aa) 5, 20; (ab) 5, 13; (ac) 16, 18, 24; (ce) 14, 23; (dd) 15, 20.

\* Mean of the tri-daily observations. † Mean of the maximum and minimum by the  
The means from the tri-daily observations are derived by the

FOR JANUARY, 1893—(Concluded).

TEMPERATURE — (IN DEGREES FAHR.)						SKY.			PRECIPITATION — (INCHES)				WIND.				
Date.	Lowest.	Date.	Monthly range.	Mean daily range.	Greatest daily range.	Date.	Least daily range.	Date.	Number of clear days.	Number of partly cloudy days.	Number of cloudy days.	Number of days on which 0.01 or more inches fell.	Total.	Greatest daily.	Average daily.	Total snow fall.	Prevailing direction.
2	-19	18	70	24	38	21	13	5	13	7	11	13	2.35	0.63	.076	8.0	N. ....
2	-8	4	60	15	26	22	5	bc	15	1	15	11	4.43	1.40	.143	13.8	N. W.
												10	4.08	2.36	.130	19.2	N. W.
1	-11	17	61	30	38	10	9	15	15	1	15	9	3.51	2.00	.113	16.9	N. W.
29	-7	18	49	16	25	21	5	4	15	7	9	10	5.63	.....	.182	15.5	N.
29	-19	10	62	14	32	3	7	bd	0.0	15.0	16.0	17.0	1.96	0.53	.063	.....	.....
29	-19	10	63	14	29	29	7	13	.....	.....	.....	16	2.00	0.51	.065	.....	.....
29	-15	11	60	15	32	8	7	be	0	15	16	18	1.92	0.58	.062	23.5	W.
29	-15	j	56	18	35	28	0	10	10.0	5.0	16.0	6.0	1.53	0.55	.060	.....	.....
29	-15	k	58	15	35	28	0	10	.....	.....	.....	5	0.89	0.52	.029	11.0	W.
2	-15	11	54	20	30	27	10	13	10	5	16	7	2.17	0.55	.070	19.2	N.
1	-31	11	64	16	52	22	4	cc	4.7	14.8	11.5	10.6	2.11	1.04	.068	.....	.....
1	-21	11	67	11	37	29	4	7	4	18	14	12	1.66	0.35	.054	13.3	N. W.
29	-19	m	68	21	52	22	4	10	.....	.....	.....	11	2.79	0.65	.090	18.5	N. E.
29	-15	11	59	17	32	10	7	6	0	17	14	15	2.38	0.43	.077	.....	S.
29	-18	11	63	17	35	10	6	20	2	12	17	11	1.68	0.43	.054	13.4	.....
29	-20	11	62	14	34	9	6	27	2	27	2	12	2.28	0.60	.074	15.7	S.
29	-19	11	64	19	37	29	8	20	12	6	13	7	2.93	1.04	.095	13.0	N.
												6	1.07	0.44	.035	14.0	S. W.
29	-9	15	52	12	36	28	2	31	2.8	6.1	22.1	19.0	2.24	0.70	.072	.....	.....
a	-2	10	47	11	28	28	5	cd	.....	.....	.....	30	1.85	0.28	.044	.....	.....
2	-5	10	53	10	35	28	4	10	0	8	23	21	2.32	0.70	.075	.....	S. W.
29	-9	12	64	15	27	29	6	16	3	1	27	19	3.80	0.60	.123	37.0	S. W.
b	-8	10	50	14	36	28	4	ce	8	6	17	20	2.01	0.65	.065	.....	S. W.
2	-6	11	54	11	32	28	8	10	1	5	25	24	1.50	0.51	.048	.....	S. W.
b	0	c	46	12	26	30	4	25	.....	.....	.....	.....	1.89	0.55	.061	.....	N. W.
29	-2	10	48	12	28	28	5	11	.....	.....	.....	11	2.22	0.40	.072	21.5	.....
29	-6	11	51	10	24	28	2	31	4	7	20	9	1.97	0.30	.064	19.0	W.
												24	2.06	0.56	.066	.....	S.
29	-9	15	52	13	27	28	5	8	2	9	20	20	3.07	0.50	.099	21.2	S. E.
29	-5	14	56	12	33	28	3	15	2	8	21	22	2.40	0.26	.077	.....	S. W.
29	-12	17	55	15	34	3	5	5	3.3	13.0	14.7	10.2	1.30	0.65	.042	.....	.....
29	-5	11	58	14	34	3	8	30	.....	.....	.....	.....	.....	.....	.....	.....	W.
29	-7	17	55	16	29	22	7	20	.....	.....	.....	8	1.54	0.65	.050	11.0	.....
29	-7	16	57	15	32	s	5	5	6	18	7	9	1.24	0.60	.040	11.8	S.
29	-5	11	53	14	28	28	7	15	3	14	14	7	1.10	0.38	.035	6.2	N. W.
2	-12	17	57	15	34	17	6	dd	1	7	23	17	1.32	0.41	.043	10.7	N. W.
29	-28	17	58	15	52	22	0	10	5.5	10.2	15.3	11.7	2.22	2.28	.072	.....	W.

(j) 4, 11, 12; (k) 4, 12; (m) 21, 22; (n) 22, 26; (p) 18, 26, 28; (q) 7, 17; (r) 3, 17; (s) 1, 26, 29; (ad) 18, 24; (ae) 4, 12, 15; (bb) 5, 8, 13; (bc) 12, 15; (bd) 8, 13, 17; (be) 8, 17; (ce) 7, 10; (cd) 7, 11, 12;

Draper thermograph. [Report received too late to be used in computing means.  
formula, 7 a. m. + 2 p. m. + 9 p. m. + 9 p. m. + 4.



## DAILY AND MONTHLY MEAN

STATIONS.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<i>Western Plateau</i> .....	32	29	13	12	14	13	16	13	18	4	3	8	6	4
Alfred Centre.....	32	27	12	6	8	8	11	10	18	2	2	3	0	0
Angelica.....	32	32	15	10	10	10	14	12	16	4	3	4	2	4
Friendship.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	8	6	4
Humphrey.....	31	25	12	9	11	14	14	12	11	-3	4	8	6	4
Arkwright.....	34	24	12	11	15	14	16	15	16	3	4	10	9	4
Sherman.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Elmira*.....	37	.....	14	19	23	15	19	13	24	-1	6	10	9	10
LeRoy.....	30	26	8	14	14	16	19	12	19	-4	2	5	8	4
Mount Morris.....	.....	33	19	14	13	14	19	18	20	12	6	11	11	7
Lockport.....	34	20	14	11	14	16	17	13	17	7	2	10	10	6
Victor.....	31	23	16	12	14	14	18	14	24	8	2	8	10	4
Wedgewood.....	30	30	13	12	16	11	16	10	14	4	0	10	5	6
Addison.....	33	35	18	14	19	14	17	16	20	8	4	8	4	4
South Canisteo.....	32	32	16	10	14	12	18	14	18	4	5	5	4	2
Arcade.....	30	28	11	10	8	9	15	11	16	2	-1	4	4	0
Italy Hill.....	30	27	12	10	14	13	12	10	15	6	1	9	6	4
<i>Eastern Plateau</i> .....	29	33	15	10	16	12	13	12	13	6	0	5	5	5
Binghamton.....	32	33	17	9	16	14	16	13	14	8	0	6	5	2
Oxford.....	29	30	15	8	16	11	11	9	12	5	-2	6	4	4
Cortland.....	29	30	16	8	18	14	17	13	15	6	0	9	4	7
South Kortright.....	28	36	14	7	15	12	12	11	10	6	-4	6	7	4
Brookfield.....	26	32	14	10	14	9	8	10	13	6	-2	6	4	6
Middletown.....	32	36	18	13	18	16	16	16	14	9	4	8	6	7
Port Jervis.....	30	39	24	12	18	18	12	14	12	10	4	4	9	5
Cooperstown.....	29	30	10	7	14	10	9	10	12	7	-1	2	3	4
New Lisbon.....	24	36	15	8	16	10	10	10	12	6	0	5	4	5
Quaker Street.....	27	34	16	9	12	8	9	11	10	6	-5	-4	3	6
Perry City.....	28	31	13	11	16	11	14	12	15	6	1	5	5	4
Waverly.....	32	34	17	12	18	16	17	16	16	2	7	10	9	2
Newfield Summit.....	30	32	14	10	15	12	12	9	13	4	-2	6	5	6
Minnewaska*.....	34	29	10	9	12	8	14	8	17	3	-2	3	1	4
<i>Northern Plateau</i> .....	22	28	8	0	7	6	4	1	6	5	-5	2	2	2
Lyon Mountain.....	29	29	4	-2	10	4	2	-1	6	11	7	16	6	4
Amersand.....	26	32	7	-2	5	4	2	-4	4	2	-7	-4	-2	2
Gloversville.....	22	32	14	6	12	14	10	10	11	6	-4	2	4	6
Constableville.....	4	11	8	-3	3	5	0	2	-2	4	-3	13	12	4
Lowville.....	24	33	8	0	6	6	1	9	6	-10	-6	-2	0	.....
Number Four.....	26	30	4	2	4	5	-1	-6	4	3	-8	-3	-1	-1
Turin.....	24	30	8	2	9	6	6	3	10	4	-11	-3	0	.....
<i>Coast Region</i> .....	39	40	28	18	23	22	18	20	21	17	8	13	10	9
New York city.....	40	38	26	20	22	24	20	20	26	13	8	13	12	13
Willet's Point.....	36	38	32	20	23	24	16	18	21	20	8	12	12	5
Brentwood.....	39	41	26	16	22	20	17	19	15	18	10	14	6	6
Setauket.....	40	43	27	18	24	21	20	21	22	17	7	14	12	12
White Plains.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
<i>Hudson Valley</i> .....	33	40	22	14	20	16	16	17	16	11	4	7	4	6
Albany.....	28	38	19	12	19	14	16	16	16	9	2	4	6	10
Lebanon Springs.....	22	38	19	8	16	14	10	14	11	10	-2	6	2	2
Honeymead Brook.....	34	41	21	13	20	14	15	16	14	9	1	2	0	3
Poughkeepsie.....	32	44	26	20	22	16	14	16	12	11	8	8	1	-1
West Point.....	35	43	28	15	20	21	23	21	16	13	6	10	7	10
Boyd's Corners.....	40	37	22	17	23	16	21	18	23	9	7	8	5	12
Carmel.....	38	38	20	12	20	16	13	17	16	12	4	8	2	6
Rondout.....	33	37	22	16	22	16	18	15	16	12	8	8	6	8
Peekskill.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
<i>Mohawk Valley</i> .....	26	29	15	7	15	9	12	11	15	2	-1	5	6	6
Rome.....	30	24	6	7	14	6	14	10	16	-5	4	6	8	4
Utica.....	21	34	24	7	16	12	9	12	14	9	-6	4	4	8
<i>Champlain Valley</i> .....	22	32	12	-1	8	7	8	4	8	10	-6	-5	2	2
Plattsburgh barracks.....	24	30	8	-6	3	4	6	2	6	13	-8	-8	0	4

## STATE METEOROLOGICAL BUREAU.

37

## TEMPERATURES FOR JANUARY, 1893.

	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Monthly mean.
1	2	5	7	18	14	16	14	26	28	26	30	21	29	35	23	24	15.9	
-2	4	6	9	9	12	20	24	24	24	24	35	20	28	32	18	24	13.8	
-7	-8	0	2	10	14	10	6	28	27	24	28	18	30	34	20	24	13.9	
-5	0	1	2	12	14	10	6	27	25	26	28	24	31	34	21	25	.....	
2	6	12	8	12	13	23	17	26	25	24	30	25	35	33	20	24	15.9	
2	1	4	12	14	14	17	20	26	28	23	26	19	33	27	22	24	16.1	
2	0	2	8	17	15	19	17	31	32	30	33	24	36	37	29	26	18.7	
2	2	5	10	14	16	16	18	26	28	25	29	18	29	40	20	20	15.8	
4	4	8	8	18	16	20	14	28	30	29	31	19	28	42	25	28	18.3	
4	4	9	12	13	16	17	14	24	28	26	24	20	28	35	20	20	16.6	
2	4	7	10	16	16	17	14	29	30	28	30	20	29	36	26	27	17.4	
2	6	7	6	14	14	17	18	26	30	24	28	14	26	34	22	26	15.9	
4	1	6	2	14	14	16	8	28	30	30	29	28	26	38	26	26	17.4	
2	-1	2	4	12	14	14	11	26	28	27	28	24	26	38	20	22	15.6	
-4	-2	1	6	9	10	10	13	25	25	23	26	17	28	30	18	22	13.0	
1	4	6	6	13	11	15	15	24	26	21	30	18	23	32	22	.....	14.5	
5	1	2	4	13	12	13	13	23	27	28	28	24	28	35	25	25	15.3	
3	-8	-10	2	12	11	13	10	26	29	30	28	28	26	38	24	26	15.4	
4	0	-2	6	14	8	12	12	17	30	26	28	25	22	34	22	26	14.3	
5	3	1	8	15	13	14	14	25	28	26	29	21	26	33	23	25	16.0	
8	1	2	2	12	10	12	16	20	24	24	28	26	25	40	26	30	15.2	
2	1	6	8	14	12	6	19	25	27	28	30	24	23	36	24	24	15.1	
9	4	4	8	12	14	14	10	19	28	30	28	30	19	33	32	30	17.0	
12	2	0	0	12	14	14	11	18	28	34	23	30	20	32	30	30	16.9	
3	1	4	6	12	11	8	17	20	23	24	28	14	22	37	24	23	13.9	
4	-4	3	7	16	11	13	16	24	26	23	35	25	22	38	27	26	15.4	
2	1	6	0	10	8	8	14	16	26	23	24	17	15	34	24	22	12.8	
4	8	-2	5	14	12	11	11	26	28	26	28	22	26	35	22	20	15.0	
8	4	-2	2	18	16	17	6	30	29	30	28	29	28	38	25	26	17.2	
6	4	6	9	9	12	14	18	30	26	28	23	24	26	28	22	.....	15.0	
6	4	5	8	13	9	11	6	20	24	25	33	22	22	37	28	22	15.6	
1	3	5	2	9	8	8	8	17	20	22	20	16	15	33	19	17	10.0	
2	2	-6	-13	-4	0	4	18	20	23	18	20	11	20	32	14	17	9.7	
0	0	8	6	8	11	5	5	14	20	22	20	10	10	32	19	14	9.0	
2	4	8	2	10	12	8	6	14	20	23	25	21	16	31	24	24	12.7	
2	12	12	3	8	8	1	6	16	17	22	21	11	17	34	17	20	9.2	
1	2	8	4	16	10	0	9	20	20	26	17	16	14	36	20	12	10.1	
0	1	5	12	14	8	2	7	19	19	20	17	15	16	33	17	18	9.2	
0	3	3	8	13	7	0	7	.....	21	24	21	15	15	33	19	17	10.1	
16	8	9	10	17	17	25	14	24	32	34	29	33	27	35	34	33	22.0	
16	6	12	15	21	20	19	20	28	35	37	32	32	27	36	34	34	23.3	
14	8	6	8	16	16	16	14	24	34	32	28	33	27	33	34	32	22.7	
16	6	5	6	16	14	8	7	18	27	32	26	33	28	34	34	34	19.7	
16	10	12	12	16	18	16	14	26	30	33	30	33	27	38	36	32	22.5	
11	3	4	4	14	11	9	7	20	29	30	26	26	21	33	22	28	17.1	
9	6	10	7	17	14	9	13	18	27	32	30	20	17	35	27	23	16.8	
11	3	6	2	14	8	6	6	15	28	29	24	24	16	34	30	26	14.6	
11	-2	3	3	14	9	10	6	18	30	30	21	24	21	34	26	28	15.8	
4	-3	-1	-1	10	5	4	2	15	29	28	23	27	18	32	33	30	15.7	
12	8	2	2	14	15	16	5	20	30	32	30	30	22	31	36	31	19.8	
12	3	-1	5	17	14	4	8	26	30	33	28	30	28	39	32	31	19.2	
12	6	3	5	13	12	7	9	22	30	29	26	26	24	34	30	30	17.4	
12	6	6	5	14	12	10	10	22	30	28	26	24	20	25	29	28	17.5	
4	4	9	8	13	10	6	15	18	26	26	28	20	20	32	24	22	14.2	
4	5	8	8	12	7	8	16	18	26	24	28	14	24	30	21	17	13.4	
5	4	10	9	14	12	5	14	18	27	28	28	25	16	34	26	26	16.1	
4	8	3	4	11	9	2	1	10	22	26	23	12	11	32	23	16	11.0	
2	2	2	6	8	8	1	2	8	18	24	24	10	14	36	20	13	10.8	

## DAILY AND MONTHLY MEAN TEMPER

STATION.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<i>Cham. Val.—(Con.)</i>														
Saratoga .....	19	33	15	6	14	10	10	6	10	8	-4	-2	5	1
Glens Falls .....	29	31	4	0	5	5	4	1	11	0	-12	-7	2	4
<i>St. Lawrence Val'y</i>	32	33	-5	-6	6	1	1	-2	6	-2	-16	-8	-2	2
Malone .....	26	39	6	4	10	9	6	9	12	2	-4	-8	2	6
Madison Barracks ..	30	32	12	6	14	4	8	3	16	3	-10	-5	3	6
Watertown .....	32	31	8	0	2	4	1	-3	8	4	-12	-8	0	5
Canton .....	32	31	3	1	3	6	6	1	9	-5	-15	-6	5	1
North Hammond ..	24	26	-4	-2	2	8	4	-1	18	-8	-12	-3	3	5
Ogdensburg* .....	30	32	8	-1	0	2	2	-1	8	4	-13	-9	0	4
Potsdam .....	33	29	14	12	14	14	17	13	18	3	4	8	9	5
<i>Great Lakes</i>	34	27	18	14	14	17	22	18	19	6	6	10	12	6
Dunkirk .....	34	27	10	12	16	16	20	14	20	-3	3	10	10	4
Buffalo .....	31	26	18	14	14	16	16	10	18	3	4	0	4	5
Eden Centre .....	33	33	16	12	16	15	18	14	18	10	5	9	10	6
Brockport .....	33	29	10	14	16	14	18	18	18	-2	0	8	11	4
Rochester .....	31	33	20	16	14	20	22	18	22	10	6	12	14	10
Fort Niagara .....	32	33	12	12	12	8	16	13	12	2	6	6	7	6
Hess road station ..	35	34	10	11	16	14	19	9	20	-3	4	8	10	2
Baldwinsville .....	30	31	11	10	12	15	15	11	16	2	2	4	10	6
Oswego .....	26	30	16	8	8	6	6	10	18	8	-1	4	2	4
Palermo .....	38	30	16	13	14	18	18	18	22	0	4	12	8	4
Lyons .....	30	33	18	14	19	15	17	15	16	7	2	8	6	8
<i>Central Lakes</i>	30	34	25	13	18	16	15	14	15	8	2	8	8	10
Fleming .....	30	33	18	14	19	14	18	15	20	9	2	8	8	10
Geneva .....	26	26	12	14	20	13	19	14	12	0	5	8	6	6
Watkins .....	31	34	17	14	17	16	16	15	18	9	1	10	6	8
Romulus .....	35	36	18	13	20	18	17	16	17	7	1	6	4	5
Hammondsport .....														
Ithaca .....														
Monthly means.	29.5	32.4	14.9	8.6	14.1	11.9	12.5	10.7	14.0	6.5	-0.3	4.4	5.2	5.1

\* Means of tri-daily observations. ‡ Mean of the maximum and minimum by the Draper and minimum of the ordinary self-registering thermometers. The means from the tri-daily received too late to be used in computing averages.

## TEMPERATURES FOR JANUARY, 1893 — (Concluded).

15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Monthly mean.
6	4	4	3	14	10	2	0	12	25	27	22	15	8	28	25	19	11.3
3	5	8	7	14	8	2	13	18	23	25	20	10	10	29	18	12	9.7
1	1	3	8	12	4	1	8	18	22	25	18	5	4	28	12	8	7.2
9	4	8	5	17	7	3	7	18	26	28	20	7	20	26	19	20	11.7
2	8	9	14	16	9	—1	16	28	29	24	22	12	18	34	22	14	12.9
2	4	6	4	14	8	1	10	18	22	24	19	14	7	30	18	10	9.1
2	8	12	11	17	13	3	19	26	26	25	21	11	9	32	16	13	10.8
4	4	9	6	10	10	4	19	11	19	22	22	5	1	26	.....	12	8.1
3	4	6	4	10	8	2	10	9	14	24	17	14	8	26	20	8	8.2
4	4	8	12	16	16	16	17	25	28	27	27	17	27	37	24	23	16.8
4	3	5	12	16	14	16	16	24	27	25	26	18	31	34	20	24	17.4
5	2	8	15	13	14	19	18	25	26	26	26	17	30	38	23	23	16.8
4	0	5	3	10	15	20	9	22	22	28	26	20	25	42	22	25	15.4
6	6	10	14	17	16	18	20	25	30	28	26	16	26	37	32	22	18.2
6	5	8	12	18	16	17	17	27	30	28	30	16	29	38	24	20	17.0
6	7	13	14	21	22	23	20	25	30	30	26	24	26	39	33	26	20.4
7	6	9	12	15	14	8	16	24	28	29	28	14	23	38	25	20	15.9
2	2	5	14	17	16	16	23	26	29	24	22	14	28	32	20	22	15.9
4	6	8	12	19	14	10	16	24	26	29	28	12	21	37	22	18	15.6
0	4	8	11	16	14	10	14	20	25	27	26	18	20	36	23	18	14.1
0	0	4	14	12	16	16	21	28	31	25	28	18	34	38	28	28	18.0
5	5	6	9	18	16	17	16	26	27	26	30	23	34	37	34	23	17.4
6	8	8	10	17	14	19	20	23	16	20	30	22	24	37	24	23	17.3
5	8	6	11	20	16	15	16	24	31	30	32	22	24	38	25	22	18.2
4	3	6	6	16	16	16	12	28	30	24	29	26	27	34	24	23	16.3
4	7	5	10	19	15	15	18	26	30	29	30	22	24	38	25	24	17.9
6	1	5	7	20	17	18	16	31	27	26	30	23	23	36	23	22	17.5
5.4	3.8	5.9	6.7	13.8	12.1	9.8	11.8	20.7	26.2	27.0	26.1	20.2	20.7	33.8	23.4	22.2	14.9

thermograph. Means for all stations not otherwise indicated are derived from the maximum observations are derived by the formula  $(7 \text{ A. M.} + 2 \text{ P. M.} + 9 \text{ P. M.} + 9 \text{ P. M.} + 4)$ . Reports

## DAILY AND MONTHLY PRECIPITATION

STATIONS.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<i>Western Plateau.</i>	0.39	0.15	0.10	0.08	0.09	0.10	0.06	0.07	0.16	0.06	0.07	0.22	0.10	0.05
Alfred Centre.....	*	11.65	.30	.20	.30	.10	.20	.40	.90			.40		
Angelica.....	.41	.22	.20		.10	.06	.05	.04	.15	T.	T.	.50	.05	T.
Bolivar.....	*	*	*	*	*	*	*	*	*	*	1.40	.20	T.	T.
Friendship.....														
Humphrey.....	.46	.42			.10		.10	.05	.20			.21	T.	T.
Little Valley.....														
Cherry Creek.....	.28	.45	.36	.18	.15	.32	.14	.18	.76	.85	1.00	.42	1.05	.74
Elmira.....						.06						.13		
Akron.....	.79	T.		T.	.11	.07	.01	.08	.10	.02		.11	.09	T.
Le Roy.....		.40	.40			.30	.10	.25	.10	.20		.20	T.	.10
Avon.....		T.		T.			T.			.08	.05	.12	.02	
Mt. Morris.....														
Lockport.....	.45	.20			T.	.25	T.	T.	.50	.10		T.	.05	
Victor.....	T.				.10	.10	.10	T.	.05	T.	T.	.10	.20	T.
Wedgewood.....	.72	.01	.02		.08	.08		T.	.12			.50	.05	
Addison.....	.68		.05	.08	.06	.08	T.	.02	.05	.02		.25		
Atlanta.....	.65	.09			T.	.02	.01		T.		.02	.02	.01	
South Canisteo.....	1.10	.10	.15	.10	.20	.05	T.	.05	.10		T.	.27	.04	T.
Arcade.....	.25	.24	.09	T.	.12	.03	.02	.03	.12	.01	T.	.13	.04	T.
Attica.....														
Varysburg.....														
<i>Eastern Plateau.</i>	0.62	0.10	0.01	0.00	0.05	0.07	0.03	0.01	0.15	0.04	0.02	0.15	0.04	0.01
Binghamton.....	.50	.02	T.		T.	.20		T.	.20	.10		.30	.10	
Cheango Forks.....	.35					.25					.25			
Oxford.....	.40	.12			.10	.05		.10	.25	T.		.10	T.	
Cortland.....	.51	.07				.05	.13	.10	.06	.02		.06	.04	.06
Deposit.....	.20					.20			.25	.30	.05	.40	.10	
South Kortright.....	.62												.15	
Brookfield.....	.20	.06	.06				.30							.06
Apulia.....														
Middletown.....	.10	1.05			.30			T.	.50			.50	T.	
Port Jervis.....	1.65	.22			.33				.46			.27		.10
Warwick.....														
Cooperstown.....	.72						.07		.24				.05	
New Lisbon.....	.66	.14	T.		T.	.02	T.		.09	.10		T.		
Quaker Street.....	.70					.20			.20					
Perry City.....	.40	.05	.08		.05	.12	T.	.05	.09	.06	T.	.12	.07	
Liberty.....														
Newark Valley.....	.40	.01	T.		.05		.05	T.	.20	T.		.20	T.	
Waverly.....	.75	T.	.04		.03	.16	T.	.01	T.	.04		.40	.02	
Ellis.....	.47		.04			.07	.01	.02	.06			.10	.07	.01
McLean.....														
Newfield Summit.....														
Minnewaska.....	2.00			.15						*	*	1.50		
<i>Northern Plateau.</i>	0.48	0.13	0.01	0.03	T.	0.00	T.	T.	0.23	0.02	0.00	0.01	0.01	0.04
West Chazy.....	.42							T.	T.					.33
Ausable Forks.....														
Keene Valley.....														
Amersand.....	T.	.20					T.							
Hawatha House.....		.02	.10	.30										
Gloversville.....	.58	T.			T.			.02	.21	T.		.11	T.	
Blue Mt. Lake.....														
Bisby Lodge.....														
Constableville.....														
Lowville.....	.75	.50							.08	.07			.04	
Number Four.....	.59	.18							*	1.12		T.		.03
Turin.....	.79	.15			T.			T.	.82	.07			.05	
Galway.....		.15							.30					
Kings Station.....	1.15								.40					
<i>Coast Region.</i>	1.27	0.33	T.	T.	0.17	0.23	0.00	T.	0.08	0.12	T.	0.39	0.06	0.09
New York city.....	.96	.17			.26	.69		T.	.05	.17	T.	.47	.02	

## TATION FOR JANUARY, 1893 — INCHES.

15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total.
0.01	T.	T.	T.	0.06	0.05	0.04	0.02	0.06	0.01	0.13	0.01	0.02	T.	0.16	0.10	0.08	2.46
T.				T.	<sup>10</sup>	<sup>10</sup>	T.	.12	T.	<sup>20</sup>		<sup>10</sup>		.20	.15	<sup>20</sup>	4.46
T.				.01	T.	T.	T.	.10	T.	.15		T.		.17	.13	T.	3.44
				.16		T.	.06	.09	T.	.15	T.	T.	T.	.31	.10	.41	2.82
.05				.34	.18		T.	.11	.02	.02		T.		.21	.13	.03	8.52
.05	T.	T.	T.	T.	.07	.02	T.	T.	.10	.02	T.	.18	T.	.12	.18	.07	0.62
				.20	.10	.20	.10	.10	.05	.30		.15		.50		.20	3.95
	T.		T.			.02	.03	.05		T.			.02	.07	.10	.04	0.55
			T.	.08	T.	T.	T.	T.	T.	.15		T.		.20	.08		2.06
					.30	.20	T.	T.		T.		.05			.10		1.30
					.10	.05		.10	.01	.05				.14	.15	.05	2.22
					.08	.01	T.	.02		.01				.12	.20	.05	1.64
							T.		.02			.02			.01		0.93
T.		T.		.05	T.	T.	.05	.10	T.	.10		.05		.20	.25		2.96
T.				.04	.05	.01	.01	.12	.02	.10	T.	.01		.15	.10		1.69
0.03	T.	0.00	0.03	0.04	0.02	0.02	0.01	0.05	0.05	0.07	T.	0.01	0.01	0.31	0.05	0.15	2.18
				.10	T.	T.	.05	T.	T.	T.				.45		.40	2.42
.05	T.			.15	.05	.05	.05	.05	.05	.05		T.		.25		.30	1.70
					.07			.06	.06	.20				.30	.05	.35	2.57
														.24	.06		1.54
.05			.45	.30	.05			.20	.20	.20						.30	3.25
					.19				.03	.30				.46			1.27
									.05	.20				.52		.40	1.92
.30								.09		T.		.08		.36	T.		3.28
										.18				.42			3.57
								.12		.11			.18	.22	.20		1.89
				.12	T.				.03	.14				.20	.03	.12	1.05
									.20					.25		.20	1.75
.03				T.	.04	.05		.06	T.	.06		.02		.13	.19	.18	1.75
T.				.01	.01	T.		.12	.02	.08				.20		.10	1.40
.02				.01	.01	T.		.03		T.	T.			.28	.25	.20	2.25
.11					.05	.02		.04	.02	.02				.15	.02	.04	1.34
														.80			3.45
T.	0.01	T.	0.01	0.06	0.05	0.00	0.00	0.04	0.07	0.29	0.05	0.00	0.08	0.26	0.06	0.10	1.97
T.	T.	T.		T.	T.			T.	.01	.10	T.		.13	T.	T.	.09	1.08
				.10									.30	.03			0.63
T.	T.		.05	.30				.07	.05	.29	.30		.30	.05			1.32
				T.								T.	.31	.31			1.64
								.20		.60				.60			
	.05				.46			T.	.41	.28	.04		.12	.40		.09	2.29
.03		T.	.14	.02				.07	.06	.71				.60		.27	3.78
								.05	.20	.70	.30			.20	.40	.10	1.65
														.30		.40	2.90
0.19	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.04	T.	0.01	0.00	0.00	T.	0.36	0.04	0.01	3.41
.28				T.				.03	T.	T.				.40		.06	3.56

## DAILY AND MONTHLY PRECIP

STATIONS.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<i>C't Region—(Con.)</i>														
Willet's Point	.80	.35			.30				T.	T.		.80	.20	.25
Brentwood	1.50				*	†.60			T.	.20		.30		.20
Setauket	1.05	.55		T.	.12	.09			.05	.10		.24	.08	T.
Bedford	2.08	.59	T.		.10	.13			.04	.12		.14	.03	
White Plains														
<i>Hudson Valley</i>														
Albany	0.76	0.33	T.	0.00	0.06	0.05	T.	0.03	0.18	0.06	0.00	0.13	0.02	0.00
Bethlehem Centre	.48	.12			T.	T.		T.	.08	.08		.02	T.	
Lebanon Springs	1.00	T.			T.		T.	T.	.15	.01		.02	T.	
Honeymead Brook	1.12	T.	.02		T.	.03	T.	.80				.06		
Pawling	1.08	.08			.08	T.		.02	.46	.24		.18	T.	
Poughkeepsie	.52	.63				.16		T.	*	†.28			.13	
Wappinger's Falls	.55	.78			.24	.36		T.	.02			.18	.10	
West Point	1.00	1.40	T.		.25			T.	.29	.16		.31		
Boyd's Corners	*	†2.28			*	†.41		*	*	†.42		.26		
Carmel	*	†2.00			*	†.30		*	*	†.39		.29		
<i>S. East Reservoir</i>														
Schojack Depot	1.00							T.	.80					
Rondout	*	†1.78						*	*	†.60		.80		
Easton	.16								.18					
Peekskill														
<i>Mohawk Valley</i>														
Rome	0.52	0.09	0.07	T.	0.00	0.10	0.02	T.	0.05	0.12	T.	T.	0.15	0.06
Utica	.51		.08			.17	.02		.01	.12			.13	.07
	.53	.18	.06	.01		.04	.01	T.	.09	.11	T.	T.	.17	.06
<i>Champlain Valley</i>														
Plattsburgh	0.46	T.	0.00	0.00	T.	0.00	0.00	0.02	0.34	0.01	0.00	0.00	0.00	0.00
Plattsburgh barracks	.52								.06					
Port Henry														
Glens Falls	.40	T.			T.				.58	.02				
Whitehall														
<i>St. Lawrence Valley</i>														
Malone	0.44	0.08	0.00	0.00	T.	0.01	0.00	0.01	0.05	0.03	T.	T.	0.01	0.25
Madison barracks	.35	.03						.05	T.					T.
Watertown	*	†.56						*	†.15				.05	.55
Canton	.80	.38			.01			.02	.02	.18	.01	T.	.03	.41
	.25	.05			.02								.02	
<i>DeKalb Junction</i>														
North Hammond	.63								.08					.02
Ogdensburg	.60	T.				.05			.20	.01				.02
Potsdam	*	†1.03						T.	.10				T.	1.00
<i>Great Lakes</i>														
Dunkirk	0.42	0.17	0.08	0.02	0.06	0.08	0.04	0.05	0.10	0.09	0.06	0.07	0.09	0.02
Buffalo	.28	.13	.05	.08	.05	.03	.05	.02	.04	.05	T.	.06	.08	.09
Eden Centre	.70	.32	.01	T.	.10	.03	T.	.06	.18	T.	T.	.05	.03	.06
Adams Centre	.40	.10	.10		.30	.40	.10	.10	.30		.30	.40	.10	
	.39	.02			.02	.04	.14							
<i>Brockport</i>														
Rochester	.65	.19	.02	T.	.04	.12	.07	.01	.17	.08	.07		.19	T.
Fort Niagara	.51	.09	.01		.03	.09	.04	.06	.03	.02	.01	.16	.08	T.
Hess Road Station	.55				*	†.09		*	*	†.36				
<i>Baldwinsville</i>														
Albion	.23	.07	.40		.10	.05	T.	.20	T.	.30	T.	T.	T.	
Lyndonville	.07	*	†.30	T.	*	†.30	.20				.30	T.	T.	.20
Demster	.33	.31					.04	.02						
Oswego	.60	.40		.04		.03	.04	.04		.04		T.		.10
	.56	.34	.01	.07	T.	.03	.02	.01	.07		.01	.01	.04	.07
<i>Palermo</i>														
Phoenix	.25	.08	.06		.02	.02	T.	.10	.50	.50		.02	.32	
Lyons	.66	.10	.24		.05	.06	T.	.16		.16	.08	.08	.10	
Erle, Pennsylvania	.19	.26	.30	.10	.12	.10	.05	T.	.18	.07	T.	.25	.25	.04
<i>Central Lakes</i>														
Fleming	0.35	0.01	0.01	T.	0.02	0.06	0.01	0.05	0.02	0.01	0.07	0.06	0.06	0.01
	.25				T.									

## TATION FOR JANUARY — (Continued).

15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total.



## DAILY AND MONTHLY PRECIP

STATIONS.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<i>Ct'l Lakes—(Con)</i>														
Geneva .....	.65	.....	.....	.....	.08	.02	.....	.15	.....	.....	.....	.12	.10	.....
Watkins .....	.06	.08	.....	.....	.02	T.	.....	.03	.....	.....	.09	.07	T.	T.
Romulus .....	.38	T.	.....	T.	.....	.13	T.	T.	T.	T.	.19	.....	0.7	.....
Hammondsport .....	.41	T.	0.4	.....	T.	.08	.03	.04	.08	.06	T.	.10	.06	.06
Ithaca .....														
Penn Yan .....														
Average .....	0.57	0.14	0.03	0.01	0.04	0.07	0.02	0.02	0.13	0.06	0.02	0.10	0.05	0.05

\* Amount included in next measurement.

† Not used in computing the averages.

averages.

§ Formerly

TATION FOR JANUARY — (*Concluded*).

15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total.
.....	.....	.....	T.	T.	.....	.....	.12	T.	.14	T.	T.	.....	.10	.....	.20	.....	1.54
.....	.....	.....	.....	T.	.....	.09	.....	T.	.....	.....	T.	T.	.....	.10	.14	T.	1.10
.01	T.	.....	.....	.01	T.	.03	T.	T.	.01	T.	.....	T.	.....	.10	.10	.10	1.32
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
0.04	0.01	T.	T.	0.05	0.02	0.01	0.01	0.04	0.05	0.12	0.01	T.	0.04	0.24	0.06	0.08	2.16

‡ Record for the month incomplete.  
Blood's Depot.

| Reports too late to be used in computing the

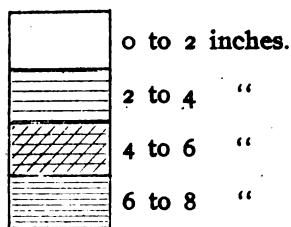
## TEMPERATURE AND RAIN

STATION.	County.	TEMPERATURE (DEGREES FAHR.).								EXTREMES OF MONTHLY MEAN TEMPERATURE FOR JANUARY.			
		Normal for the month of January.	Length of record, years.	Record begins.	Record ends.	Mean for January, 1893.	Departure from normal.	Highest.	Year.	Lowest.	Year.		
<i>Western Plateau</i> .....		22.6	..	..	..	16.2	-6.5	..	..	..	..	..	..
Angelica*	Allegany	20.9	10	1864	1893	13.9	-7.0	31.9	1890	12.0	1857	..	..
Humphrey	Cattaraugus	23.0	11	1893	1893	15.9	-7.1	34.2	1890	15.9	1893	..	..
Elmira*	Chemung	24.0	13	1852	1893	18.7	-5.3	..	..	..	..	..	..
<i>Eastern Plateau</i> .....		22.0	..	..	..	15.6	-6.5	..	..	..	..	..	..
Cooperstown	Otsego	20.2	35	1854	1893	13.9	-6.3	31.6	1890	10.3	1857	..	..
Waverly	Tioga	23.9	12	1882	1893	17.2	-6.7	33.5	1890	17.2	1893	..	..
<i>Northern Plateau</i> .....		19.0	..	..	..	10.1	-9.1	..	..	..	..	..	..
Keene Valley*	Essex	18.9	7	1879	1891	..	..	..	..	..	..	..	..
Lowville	Lewis	19.2	26	1827	1893	10.1	-9.1	26.9	1843	5.4	1857	..	..
<i>Coast Region</i> .....		30.0	..	..	..	23.0	-7.4	..	..	..	..	..	..
New York City	New York	32.4	23	1871	1893	23.3	-7.1	40.0	1890	23.3	1893	..	..
Setauket	Suffolk	30.5	8	1886	1893	22.8	-7.7	38.8	1890	22.8	1893	..	..
White Plains	Westchester	29.2	27	1863	1891	..	..	38.9	1890	21.6	1865	..	..
<i>Hudson Valley</i> .....		25.4	..	..	..	17.1	-8.2	..	..	..	..	..	..
Albany*	Albany	22.9	20	1874	1893	16.6	-6.1	30.8	1890	14.6	1875	..	..
Honey-mead Brook	Dutchess	23.5	10	1894	1893	15.8	-7.7	32.4	1890	15.8	1893	..	..
Poughkeepsie*	"	25.7	20	1829	1893	15.7	-10.0	..	..	..	..	..	..
West Point	Orange	28.6	48	1824	1893	19.8	-8.8	37.6	1858	19.1	1857	..	..
Rondout*	Ulster	26.1	28	1823	1893	17.5	-8.6	34.7	1838	17.5	1893	..	..
<i>Mohawk Valley</i> .....		23.2	..	..	..	15.1	-8.1	..	..	..	..	..	..
Utica	Oneida	23.2	33	1826	1893	15.1	-8.1	30.3	1890	9.2	1857	..	..
<i>Champlain Valley</i> .....		17.1	..	..	..	10.8	-6.3	..	..	..	..	..	..
Plattsburgh Barracks.	Clinton	17.1	34	1839	1893	10.8	-6.3	27.4	1890	9.7	1857	..	..
<i>St. Lawrence Valley</i> .....		18.6	..	..	..	10.0	-8.7	..	..	..	..	..	..
Madison Barracks	Jefferson	20.6	31	1829	1893	11.7	-8.9	30.2	1843	11.7	1893	..	..
Canton*	St. Lawrence	17.1	32	1832	1893	9.1	-9.0	29.3	1890	7.2	1875	..	..
North Hammond	"	18.8	15	1866	1893	10.8	-8.0	26.4	1869	6.7	1875	..	..
Potsdam*	"	18.0	23	1823	1893	8.2	-9.8	27.6	1843	7.4	1897	..	..
<i>Great Lakes</i> .....		24.6	..	..	..	16.8	-7.5	..	..	..	..	..	..
Buffalo	Erie	24.2	23	1871	1893	16.8	-7.5	36.8	1890	16.8	1893	..	..
Rochester	Monroe	23.8	23	1871	1893	17.0	-6.8	36.5	1890	17.0	1893	..	..
Fort Niagara	Niagara	26.4	25	1829	1893	20.4	-6.0	..	..	..	..	..	..
Baldwinsville	Onondaga	27.2	18	1849	1893	15.9	-6.3	..	..	..	..	..	..
Oswego	Oswego	24.3	23	1871	1893	15.6	-8.7	36.2	1890	15.4	1888	..	..
Palermo	"	22.3	40	1854	1893	14.1	-8.2	29.4	1890	11.6	1868	..	..
Lyons	Wayne	25.5	6	1890	1893	..	..	..	..	..	..	..	..
Erie, Pennsylvania	Erie	27.0	20	1874	1893	18.0	-9.0	33.0	1890	18.0	1893	..	..
<i>Central Lakes</i> .....		25.0	..	..	..	17.8	-6.9	..	..	..	..	..	..
Geneva	Ontario	25.4	16	1854	1893	18.2	-7.2	33.6	1890	17.4	1856	..	..
Ithaca	Tompkins	24.2	15	1879	1893	17.5	-6.6	34.7	1890	17.5	1893	..	..
Average departure.....		..	..	..	..	..	-7.6	..	..	..	..	..	..

\* Location of the instruments has been changed during the period covered by the record.

Whitehall.

### Scale of Shades.



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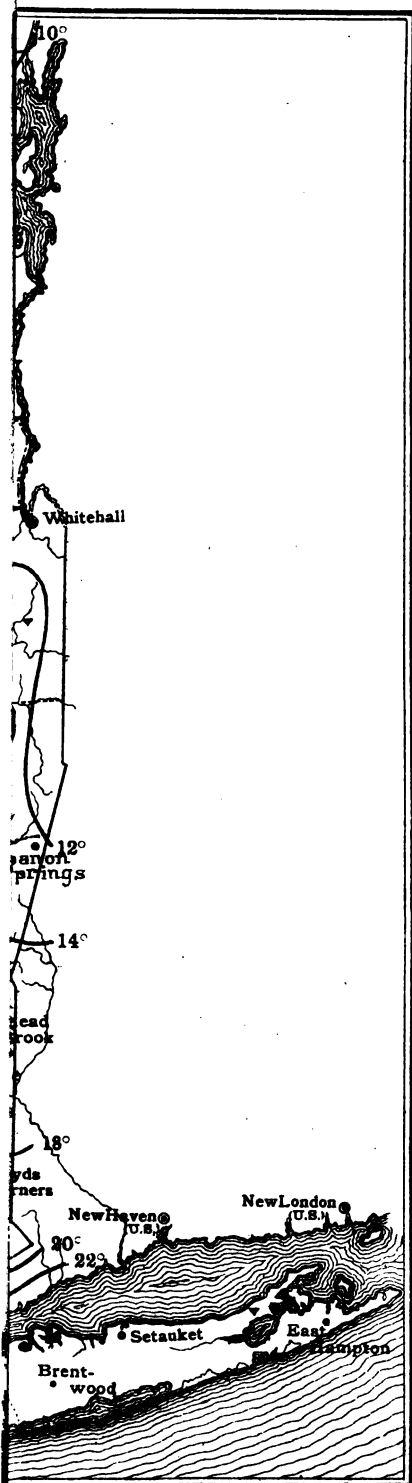
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## FALL STATISTICS.—JANUARY.

STATION.	County.	RAINFALL (INCHES).									
		Average for the month of January.	Length of record, years.	Record begins.	Record ends.	Total for January, 1893.	Departure from the average.	EXTREMES OF MONTHLY PRECIPITATION FOR JANUARY.			
								GREATEST.		LEAST.	
								Amount.	Year.	Amount.	Year.
<i>Western Plateau</i> .....		2.80	...	...	...	1.96	-0.84	...	...	...	...
Angelica.....	Allegany.....	2.88	8	1871	1893	2.44	-0.44	4.45	1878	1.57	1876
Humphrey.....	Cattaraugus..	3.26	11	1883	1893	2.82	-0.44	5.02	1890	1.82	1891
Elmira.....	Chemung.....	2.26	16	1852	1893	0.62	-1.64	...	...	...	...
<i>Eastern Plateau</i> .....		2.93	...	...	...	2.57	-0.36	...	...	...	...
Cooperstown.....	Otsego.....	2.62	38	1854	1893	1.19	-0.73	5.54	1891	0.32	1860
Port Jervis.....	Orange.....	3.97	10	1880	1893	3.57	-0.40	7.02	1891	2.06	1890
Waverly.....	Tioga.....	2.19	12	1882	1893	2.25	+0.06	3.99	1892	1.20	1887
<i>Northern Plateau</i> .....		2.56	...	...	...	2.29	-0.16	...	...	...	...
Keene Valley.....	Essex.....	2.67	7	1879	1891	...	...	...	...	...	...
Lowville.....	Lewis.....	2.45	24	1827	1893	2.29	-0.16	...	...	...	...
<i>Coast Region</i> .....		4.41	...	...	...	3.32	-1.00	...	...	...	...
New York city.....	New York.....	4.04	23	1871	1893	3.56	-0.48	6.15	1882	1.15	1871
Setauket.....	Suffolk.....	4.61	8	1885	1893	3.09	-1.52	6.28	1891	1.87	1890
White Plains.....	Westchester..	4.58	24	1854	1891	...	...	13.70	1883	1.22	1890
<i>Hudson Valley</i> .....		3.40	...	...	...	3.41	+0.01	...	...	...	...
Albany.....	Albany.....	2.98	20	1874	1893	1.31	-1.67	6.12	1891	1.31	1893
Honeymead Brook.....	Dutchess.....	3.82	10	1884	1893	2.69	-1.13	6.89	1891	2.11	1890
Poughkeepsie.....	Orange.....	2.08	15	1830	1870	2.35	+0.27	...	...	...	...
West Point.....	Putnam.....	3.61	43	1840	1893	4.43	+0.82	9.95	1841	0.82	1851
Boyd's Corners.....	Ulster.....	4.14	11	1866	1893	4.03	-0.11	9.76	1891	1.44	1872
Rondout.....	Ulster.....	3.76	23	1829	1893	5.63	+1.87	11.38	1891	1.15	1837
<i>Mohawk Valley</i> .....		3.31	...	...	...	1.92	-1.39	...	...	...	...
Utica.....	Oneida.....	3.31	37	1828	1893	1.92	-1.39	8.06	1836	1.50	1846
<i>Champlain Valley</i> .....		1.75	...	...	...	0.89	-0.86	...	...	...	...
Plattsburgh Barracks	Clinton.....	1.75	33	1840	1893	0.89	-0.86	4.30	1892	0.47	1842
<i>St. Lawrence Valley</i> .....		2.40	...	...	...	1.95	-0.45	...	...	...	...
Malone.....	Franklin.....	2.62	13	1830	1893	1.66	-0.96	...	...	...	...
Madison Barracks.....	Jefferson.....	2.41	31	1840	1893	2.79	+0.38	4.71	1874	0.92	1879
North Hammond.....	St. Lawrence..	2.90	16	1866	1893	2.28	-0.62	5.94	1870	1.39	1871
Potsdam.....	St. Lawrence..	1.68	24	1828	1893	1.07	-0.61	3.50	1828	0.35	1834
<i>Great Lakes</i> .....		2.78	...	...	...	2.21	-0.57	...	...	...	...
Buffalo.....	Erie.....	2.92	23	1871	1893	2.23	-0.59	5.61	1874	1.16	1871
Rochester.....	Monroe.....	3.14	23	1871	1893	1.56	-1.64	8.05	1878	0.94	1883
Fort Niagara.....	Niagara.....	1.93	34	1841	1893	1.89	-0.04	4.45	1874	0.53	1879
Oswego.....	Oswego.....	2.94	23	1871	1893	2.06	-0.88	6.49	1884	0.92	1887
Palermo.....	Erie.....	2.37	39	1854	1893	3.07	+0.70	5.30	74-'87	1.50	'66-'69
Erie, Pennsylvania.....	Erie.....	3.39	20	1874	1893	2.40	-0.99	6.20	1878	1.41	1875
<i>Central Lakes</i> .....		2.16	...	...	...	1.43	-0.74	...	...	...	...
Geneva.....	Ontario.....	2.08	22	1850	1893	1.54	-0.54	6.78	1863	0.57	1352
Ithaca.....	Tompkins.....	2.25	15	1879	1893	1.32	-0.90	3.78	1892	0.57	1879
Average departure.....		...	...	...	...	...	-0.51	...	...	...	...



## Meteorological Summary for February, 1893.

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The average atmospheric pressure (reduced to sea-level and 32 degrees Fahr.) for the State of New York during February, was 30.11 inches. The highest barometer was 30.89 inches, at Rochester, on the fourth; and the lowest was 29.07 inches, at New York city, on the twenty-second. The average of the mean pressures at six stations of the National Bureau was 0.03 above the normal value; the departures, though plus at all stations, show considerable range; being 0.01 inch at New York and Oswego, and 0.05 inch at Rochester and Erie, Pa.

The mean temperature of the State, as derived from the records of seventy-four stations, was 20.5 degrees; the highest general daily mean being 36.5 degrees, on the fifteenth, and the lowest 5.6 degrees, on the fifth. The highest local monthly mean was 29.7 degrees, at New York city; and the lowest was 13.0 degrees, at Malone. The maximum temperature recorded during the month was 57 degrees, at Poughkeepsie, on the fifteenth; and the lowest was 21 degrees below zero, at Number Four, Lewis county, on the twenty-first. The mean monthly range of temperature was 54 degrees; the greatest range being 65 degrees, at Glens Falls, and the least, 42 degrees, at Setauket, L. I. The mean daily range was 18 degrees; the greatest daily range being 51 degrees, at Madison Barracks, on the sixth, and the least, 0.0 degrees, at Plattsburgh Barracks, on the twentieth. The mean temperatures for the various sections of the State were as follows: The western plateau, 21.5 degrees; the eastern plateau, 20.8 degrees; the northern plateau, 16.0 degrees; the coast region, 29.0 degrees; the Hudson valley, 23.7 degrees; the Mohawk valley, 18.0 degrees; the Champlain valley, 16.0 degrees; the St. Lawrence valley, 15.7 degrees; the Great Lake region, 22.0 degrees; and the Central Lake region, 22.3 degrees. The average of the mean temperatures at twenty-

nine stations possessing records for previous years was 3.1 degrees below the normal value.

The mean relative humidity was 79 per cent. The mean dew point was 17 degrees.

The average precipitation for the State was 4.64 inches of rain and melted snow. The precipitation was in excess of the average in all regions excepting the St. Lawrence valley, where the amount was about normal; the greatest departures occurring in the Mohawk and Hudson valleys and in the coast region, being 4.55 inches, 3.99 inches and 3.18 inches, respectively. The maximum local precipitation was 9.49 inches, at Eden Center, Erie county; and the minimum was 0.86 inches, at Atlanta, Steuben county. Heavy general precipitation occurred on the first-second, sixth, tenth, thirteenth, eighteenth and twenty-second. Amounts to equal or exceed 1.50 inches in twenty-four hours occurred as follows: On the first, at Eden Center, in the Great Lake region; on the tenth, at Friendship and at Humphrey, in the western plateau; on the thirteenth, at New York city, Willets Point and Setauket, in the coast region, and at Wappingers Falls, in the Hudson valley; on the eighteenth, at Minnewaska, in the eastern plateau, and at West Point, in the Hudson valley; on the twenty-second, at Quaker Street, in the eastern plateau, at Galway and Kings Station, in the northern plateau, at Utica, in the Mohawk valley, at Glens Falls, in the Champlain valley, and at nearly all stations in the coast and the Hudson valley regions. The total snowfall over the State averaged about 30 inches, being heaviest in the Mohawk and Hudson valleys, the southern portion of the Champlain valley, and the eastern plateau. The average precipitation at twenty-eight stations possessing records for previous years was 1.77 inches in excess of the normal amount.

The average number of days on which the precipitation amounted to 0.01 inch or more was 13.6; the maximum number obtaining in the regions of the Mohawk valley and the Great Lakes, and the minimum in the Central Lake region. The average number of clear days was 4.8; of partly cloudy days, 8.3; and of cloudy days, 14.9.

The prevailing wind direction was from the northwest. The average total travel at six stations of the National Bureau and at Ithaca was 8,108 miles; the movement being above the average values at all stations excepting Rochester.

Hail and sleet storms are reported for the first, second, third, sixth, ninth, tenth, thirteenth, fourteenth, fifteenth and twenty-eighth.

Auroras were observed on the fourth, fifth, eighth, fifteenth, sixteenth and twenty-fourth. Lightning was observed at South Canisteo on the eighteenth and nineteenth. Solar halos were observed on the twelfth, nineteenth and twenty-first, and a lunar halo was observed on the twenty-eighth.

The data for this summary have been obtained from the records of sixty-three Voluntary Observers, six stations of the National Bureau, five Military Posts and twenty Special Rainfall Observers.

During February the weather of New York was influenced by nine areas of high and twelve areas of low pressure; the number of each exceeding the average values for February of previous years. A rather unusual activity of the atmospheric movements was also manifested by the severity of several of the storms, as well as by the very rapid easterly progress of the cyclones and anticyclones; the latter tending to move toward the northern or central, rather than the southern coast. Thus, all conditions favored variable weather with rapid and large temperature changes.

On the first a considerable snowfall occurred in central and southern New York, accompanying the formation of a "trough" between two anticyclones over the northeastern coast and Great Lakes respectively. As the second of these areas moved over the State on the following day, the temperature fell rapidly from the normal value, but again rose slightly as a depression of considerable energy passed northeastward over Lake Ontario and down the St. Lawrence valley. A very intense high pressure system, developing over British America, passed eastward along the northern border on the fifth, bringing clear weather and the severest cold of the month in the southern part of the State; the temperature rising rapidly, however, in consequence of the develop-

ment of a "trough" condition between Texas and the Upper Lakes on the sixth; a heavy precipitation occurring in the coast region on that day, and continuing during the seventh as the depression passed north of the State. A cold wave followed on the eighth and ninth, as the fourth anticyclone of February passed from the central to the Atlantic Coast States; but warm southerly winds and general rains on the tenth, accompanied a deep depression which moved northeastward from the Upper Lakes to the Canadian coast on that day. An energetic storm passing northward along the Atlantic coast on the thirteenth, gave severe gales and heavy snows on the seaboard, the temperature falling somewhat at the northern stations, but remaining nearly normal in the southern section until the fifteenth, when the formation of a "trough" of low pressure from the Gulf to the Great Lakes established a circulation of warm southerly winds, bringing a general rainfall, which was heaviest on the Atlantic coast, as in preceding cases.

A cold wave of great severity accompanied an anticyclone which moved southeastward from British America over New York and New England on the seventeenth, a considerable fall of snow occurring in advance of the area. From this time until the close of the month the temperature remained continuously below the normal; a condition due, apparently, to the southerly course of the storms during the period in question; the high pressure areas, as before, moving toward the central and northern rather than toward the southern coast. Depressions passed eastward over some portions of this State on the eighteenth, nineteenth, twenty-second and twenty-fourth; beside which, an intense storm moved northward along the coast on the eighteenth, giving high winds and moderately heavy snow fall. The precipitation accompanying the remaining storms was slight, excepting in the case of the cyclone of the twenty-second, which gave snows of a considerable depth in southern and central New York. The twelfth "low" of the month, which passed over the Upper Lakes and thence northeastward on the twenty-eighth, raised the temperature somewhat, and was attended by a slight precipitation.

## METEOROLOGICAL DATA

LOCATION OF STATIONS.			BAROMETER.						HUMIDITY.		TEMP.		
STATIONS.	County.	Elevation, feet.	Mean.	Highest	Date.	Lowest.	Date.	Monthly range.	Mean relative.	Dew point (degrees).	Mean of tri-daily observation.	Mean of maximum and minimum.	Highest.
<i>Western Plateau</i> .....													
Alfred Centre .....	Allegany	1824										21.5	48
Angelica .....	"	1340									20.8	20.0	48
Friendship .....	"	1550									20.8	21.2	47
Humphrey .....	Cattaraugus	1950							86	18	21.9	21.5	47
Arkwright .....	Chautauqua	1260										21.9	42
Elmira .....	Chemung	863									25.5	25.5	
LeRoy .....	Genesee	888										19.6	33
Mt Morris .....	Livingston	625										22.3	48
Lockport .....	Niagara	616										21.9	44
Victor .....	Ontario	650										21.0	47
Wedgewood .....	Schuyler	1350							86	16	26.4	21.3	47
Addison .....	Stauben	1000							68	15	33.8	24.4	48
South Canisteo .....	"	1480							79	16	21.4	21.5	47
Arcade .....	Wyoming	1557									18.5	19.1	44
Italy Hill .....	Yates	1650										19.3	42
<i>Eastern Plateau</i> .....													
Binghamton .....	Broome	870									21.4	20.8	52
Oxford .....	Chenango	1250										19.2	42
Cortland .....	Cortland	1120										20.4	42
South Kortright .....	Delaware	1700										21.6	47
Brookfield .....	Madison	1350							74	13	19.4	18.2	41
Middletown .....	Orange	660									23.8	23.8	46
Port Jervis .....	"	470										23.4	50
Cooperstown .....	Otsego	1300									19.4	18.0	47
New Lisbon .....	"	1234									19.2	19.5	47
Quaker Street .....	Schenectady	973										18.5	50
Perry City .....	Schuyler	1038									20.8	20.4	42
Waverly .....	Tioga	825									23.4	23.7	52
Newfield Summit .....	Tompkins	2000										20.4	43
Minnewaska .....	Ulster	1800									19.7	22.2	46
<i>Northern Plateau</i> .....													
Lyon Mountain .....	Clinton	1917										16.0	17
Keene Valley .....	Essex	1015										15.5	42
Amersand .....	Franklin	1600	30.08	30.80	4	29.18	19	1.62			14.0	14.5	44
Hiawatha House .....	Franklin												
Gloversville .....	Fulton	802									18.0	18.1	47
Blue Mountain Lake .....	Hamilton												
Bisby Lodge .....	Herkimer	1950											
Constableville .....	Lewis	1246									17.1	16.4	43
Lowville .....	"	900										16.7	44
Number Four .....	"	1571	30.08	30.74	4	29.23	19	1.51				15.0	39
Turin .....	"	1240										15.7	42
<i>Coast Region</i> .....													
New York City .....	New York	161	30.13	30.81	5	29.07	22	1.74		69	21	29.0	56
Willels Point .....	Queens											29.7	54
Brentwood .....	Suffolk	75										23.6	50
Setauket .....	"	40								74	22	28.6	56
											22	28.4	49
<i>Hudson Valley</i> .....													
Albany .....	Albany	85	30.12	30.86	5	29.19	19	1.67	85	18		23.7	57
Lebanon Springs .....	Columbia	880										21.6	51
Honeymead Brook .....	Dutchess	450									22.3	21.9	53

## 53

TEMPERATURE — (IN DEGREES FAHR.).				SKY.				PRECIPITATION — (INCHES).				WIND.					
Date.	Lowest	Date.	Monthly range.	Mean daily range.	Greatest daily range.	Date.	Least daily range.	Date.	Number of clear days.	No. of partly cloudy days.	Number of cloudy days.	Number of days on which 0.01 or more inches fell.	Total.	Greatest daily.	Average daily.	Total snow fall.	Prevailing direction.
a	10	21	52	18	45	5	bb	5.2	8.2	14.6	15.4	3.70	1.60	.132	.....	.....	N. W.
b	7	20	56	18	45	5	6	22	8	18	9	4.15	0.89	.148	.....	.....	N. W.
c	10	21	57	19	38	5	7	bc	10	15	16	4.87	0.55	.156	.....	.....	W.
d	7	21	54	16	43	27	5	18	6	18	18	4.96	1.60	.163	.....	.....	W.
e	8	20	55	17	31	y	6	22	1	8	19	5.52	1.60	.197	.....	.....	S. W.
f	7	20	49	15	35	3	6	4	.....	.....	.....	.....	.....	.....	.....	.....	.....
g	7	21	40	18	34	21	7	17	12	0	16	7	1.61	0.83	.058	.....	N. W.
h	7	21	40	18	34	21	7	17	5	18	10	18	6.88	.....	.....	.....	W.
i	9	21	57	21	39	28	11	bd	2	9	17	.....	.....	.....	.....	.....	W.
j	2	21	46	16	36	7	7	be	5	11	12	.....	.....	.....	.....	.....	N. W.
k	3	21	50	17	34	28	5	7	6	8	14	.....	3.86	0.48	.138	.....	W.
l	8	21	55	21	34	7	7	22	7	10	11	16	2.49	0.60	.069	.....	W.
m	6	21	56	18	32	q	7	22	9	11	8	15	2.27	0.62	.061	.....	N. W.
n	7	q	54	20	37	6	9	22	8	4	16	14	3.58	0.73	.126	.....	N. W.
o	9	r	53	18	35	7	6	bf	4	8	16	22	4.60	1.02	.164	.....	.....
p	5	20	47	17	29	aa	5	22	.....	.....	.....	.....	.....	.....	.....	.....	.....
q	10	21	56	18	32	q	7	22	9	11	8	15	2.27	0.62	.061	.....	N. W.
r	7	q	54	20	37	6	9	22	8	4	16	14	3.58	0.73	.126	.....	N. W.
s	9	r	53	18	35	7	6	bf	4	8	16	22	4.60	1.02	.164	.....	.....
t	5	20	47	17	29	aa	5	22	.....	.....	.....	.....	.....	.....	.....	.....	.....
u	10	21	56	18	32	q	7	22	9	11	8	15	2.27	0.62	.061	.....	N. W.
v	7	q	54	20	37	6	9	22	8	4	16	14	3.58	0.73	.126	.....	N. W.
w	9	r	53	18	35	7	6	bf	4	8	16	22	4.60	1.02	.164	.....	.....
x	5	20	47	17	29	aa	5	22	.....	.....	.....	.....	.....	.....	.....	.....	.....
y	10	21	56	18	32	q	7	22	9	11	8	15	2.27	0.62	.061	.....	N. W.
z	7	q	54	20	37	6	9	22	8	4	16	14	3.58	0.73	.126	.....	N. W.
aa	9	r	53	18	35	7	6	bf	4	8	16	22	4.60	1.02	.164	.....	.....
ab	5	20	47	17	29	aa	5	22	.....	.....	.....	.....	.....	.....	.....	.....	.....
ac	10	21	56	18	32	q	7	22	9	11	8	15	2.27	0.62	.061	.....	N. W.
ad	7	q	54	20	37	6	9	22	8	4	16	14	3.58	0.73	.126	.....	N. W.

## METEOROLOGICAL DATA

LOCATION OF STATIONS.			BAROMETER.						HUMIDITY.		TEMP.		
STATIONS.	County.	Elevation, feet.	Mean.	Highest.	Date.	Lowest.	Date.	Monthly range.	Mean relative.	Dew point (degrees).	Mean of tri-daily observations.	Mean of maximum and minimum.	Highest.
<i>Hudson Val — (Con.)</i>													
Poughkeepsie.....	Dutchess.....	180.....	.....	.....	.....	.....	.....	.....	.....	.....	23.6	23.6	57
West Point.....	Orange.....	167.....	.....	.....	.....	.....	.....	.....	.....	.....	23.6	23.6	56
Boyd's Corners.....	Putnam.....	546.....	.....	.....	.....	.....	.....	.....	.....	.....	23.8	23.8	56
Carmel.....	Putnam.....	500.....	.....	.....	.....	.....	.....	.....	.....	.....	24.6	23.1	53
Rondout.....	Ulster.....	150.....	.....	.....	.....	.....	.....	.....	.....	.....	24.9	24.9	52
Peekskill.....	Westchester.....	250.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
<i>Mohawk Valley</i>													
Rome.....	Oneida.....	445.....	.....	.....	.....	.....	.....	.....	.....	.....	18.0	18.0	43
Utica.....	.....	537.....	.....	.....	.....	.....	.....	.....	.....	.....	16.7	16.7	42
<i>Champlain Valley</i>													
Plattsburgh.....	Clinton.....	150.....	.....	.....	.....	.....	.....	.....	.....	.....	16.0	16.0	48
Plattsburgh Barracks	.....	125.....	.....	.....	.....	.....	.....	.....	.....	.....	18.8	18.8	46
Saratoga.....	Saratoga.....	270.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Glens Falls.....	Warren.....	340.....	.....	.....	.....	.....	.....	.....	.....	.....	18.1	18.1	48
Whitehall.....	Washington.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
<i>St. Lawrence Valley</i>													
Malone.....	Franklin.....	810.....	.....	.....	.....	.....	.....	.....	.....	.....	15.7	15.7	44
Madison Barracks.....	Jefferson.....	289.....	.....	.....	.....	.....	.....	.....	.....	.....	13.2	13.0	44
Watertown.....	.....	496.....	.....	.....	.....	.....	.....	.....	.....	.....	17.5	17.5	43
Canton.....	St. Lawrence.....	304.....	.....	.....	.....	.....	.....	.....	.....	.....	14.4	14.4	44
North Hammond.....	.....	300.....	.....	.....	.....	.....	.....	.....	.....	.....	15.9	16.1	44
Ogdensburg.....	.....	258.....	.....	.....	.....	.....	.....	.....	.....	.....	12.8	13.8	43
Potsdam.....	.....	300.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
<i>Great Lakes</i>													
Dunkirk.....	Chautauqua.....	590.....	.....	.....	.....	.....	.....	.....	.....	.....	22.0	22.0	53
Buffalo.....	Erie.....	690.....	30.11	30.87	4	29.30	19	1.57	80	17	22.2	21.0	47
Eden Centre.....	.....	694.....	.....	.....	.....	.....	.....	.....	.....	.....	24.0	24.0	53
Brockport.....	Monroe.....	629.....	.....	.....	.....	.....	.....	.....	.....	.....	22.8	22.8	48
Rochester.....	Monroe.....	621.....	30.14	30.89	4	29.17	19	1.72	81	17	21.4	21.4	44
Fort Niagara.....	Niagara.....	263.....	.....	.....	.....	.....	.....	.....	.....	.....	25.0	25.0	45
Hess Road Station.....	.....	330.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Baldwinsville.....	Onondaga.....	390.....	.....	.....	.....	.....	.....	.....	.....	.....	21.3	19.8	44
Albion.....	Orleans.....	521.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Oswego.....	Oswego.....	304.....	30.10	30.87	4	29.12	19	1.75	79	16	19.8	19.8	43
Palermo.....	.....	400.....	.....	.....	.....	.....	.....	.....	.....	.....	19.3	19.0	41
Lyons.....	Wayne.....	407.....	.....	.....	.....	.....	.....	.....	.....	.....	23.5	22.8	45
Erie, Pa.....	Erie.....	681.....	30.13	30.87	4	29.36	23	1.51	84	20	24.0	24.0	50
<i>Central Lakes</i>													
Fleming.....	Cayuga.....	1000.....	.....	.....	.....	.....	.....	.....	.....	.....	21.6	21.3	43
Geneva.....	Ontario.....	459.....	.....	.....	.....	.....	.....	.....	.....	.....	23.0	21.9	45
Watkins.....	Schuyler.....	737.....	.....	.....	.....	.....	.....	.....	.....	.....	23.1	22.3	50
Romulus.....	Seneca.....	719.....	.....	.....	.....	.....	.....	.....	80	16	22.8	22.8	45
Hammondsport.....	Steuben.....	800.....	.....	.....	.....	.....	.....	.....	.....	.....	22.7	23.0	49
Ithaca.....	Tompkins.....	840.....	30.10	30.85	4	29.12	19	1.73	.....	.....	22.7	23.0	49
Mean.....			30.11	30.89	4	29.07	22	1.66	79	17	20.5	20.5	57

\* Mean of the tri-daily observations. † Mean of the maximum and minimum by the Draper ther daily observations are derived by the formula  
 (a) 7, 10, 14; (b) 6, 7, 15; (c) 3, 14, 15; (d) 6, 15; (e) 6, 14; (f) 7, 14; (g) 10, 15; (h) 6, 9; (i) 14, 15; (j) 3, 4, 21; (k) 19, 20; (l) 4, 5; (m) 6, 21; (n) 3, 7, 20; (o) 7, 26; (p) 5, 8; (q) 4, 16; (r) 22; (s) 22, 23; (t) 2, 13; (u) 2, 18; (v) 12, 20; (w) 4, 11; (x) 8, 23; (y) 4, 8; (z) 11,

FOR FEBRUARY, 1893 — (Concluded).

TEMPERATURE—(IN DEGREES FAHR.).									SKY.		PRECIPITATION—INCHES.				WIND.		
Date.	Lowest.	Date.	Monthly range.	Mean daily range.	Greatest daily range.	Date.	Least daily range.	Date.	Number of clear days.	No. of partly cloudy days.	Number of cloudy days.	Number of days on which 0.01 or more inches fell.	Total.	Greatest daily.	Average daily.	Total snow fall.	Prevailing direction.
15	—7	27	64	22	41	27	8	2	9	5	14	16	6.78	1.00	.242	31.0	N.
15	—2	5	58	17	29	6	5	13	12	4	12	12	7.20	1.78	.280	46.8	N. W.
15	—3	11	56	20	43	6	8	20	12	4	12	14	8.05	2.60	.388	44.5	N. W.
15	—1	5	53	14	32	6	4	24	13	4	11	10	7.59	2.14	.271	47.0	N. W.
15	—1	5	53	14	32	6	4	24	13	4	11	10	8.71	2.00	.311	54.0	S.
10	—10	5	52	18	39	6	8	22	1	5	22	17.5	7.42	2.13	.264	.....	.....
10	—9	4	51	18	38	9	11	dd	.....	.....	.....	16	7.04	2.13	.251	.....	.....
10	—10	5	53	18	39	6	8	22	1	5	22	19	7.79	1.70	.278	72.2	W.
15	—17	21	64	22	47	6	.....	20	5	11	12	11	3.59	1.60	.126	.....	.....
10	—16	5	62	20	47	6	.....	20	.....	.....	.....	6	1.54	0.48	.055	15.2	W.
15	—17	21	65	23	37	21	10	16	5	41	12	16	5.50	1.60	.196	41.0	N.
15	—16	5	57	20	51	6	2	7	5.6	10.0	12.4	14.0	2.50	1.60	.089	.....	.....
15	—15	5	59	18	48	7	3	2	7	7	14	12	2.52	0.35	.090	16.3	W.
15	—15	21	58	22	51	6	2	7	.....	.....	.....	13	2.35	0.57	.064	17.8	S. W.
15	—10	21	52	21	36	7	10	24	4	14	10	16	3.89	0.50	.121	.....	S.
14	—16	5	60	20	46	6	8	1	7	11	10	10	1.94	0.63	.069	16.3	.....
14	—10	5	54	19	40	28	6	7	2	12	14	12	1.88	0.40	.065	19.9	S.
7	—15	5	58	21	50	6	10	24	8	6	14	7	2.99	1.60	.107	23.0	S. W.
7	—9	5	49	16	43	7	4	de	2.8	5.9	19.3	17.1	4.37	1.64	.155	.....	.....
6	—3	20	50	15	30	27	7	ef	.....	.....	.....	18	3.99	0.98	.132	.....	.....
14	—4	20	51	14	28	5	5	15	1	13	14	19	4.21	0.65	.150	.....	S. W.
7	—10	20	63	20	43	7	5	8	o	.....	28	17	9.49	1.64	.389	46.0	S. W.
15	—0	w	48	16	27	6	6	11	.....	.....	.....	19	3.52	0.65	.126	.....	S. W.
6	—1	20	45	14	27	9	4	4	2	6	20	20	3.31	0.54	.113	.....	S. W.
15	—4	20	41	15	28	7	6	19	.....	.....	.....	6	2.24	0.65	.080	6.5	W.
6	—5	x	49	18	33	3	9	20	6	6	16	17	5.78	1.25	.306	29.0	.....
6	—6	5	49	13	34	6	4	11	4	1	23	20	2.11	0.73	.075	.....	S. E.
15	—9	5	50	18	34	6	7	ee	3	6	19	.....	.....	.....	.....	S. E.	
15	—20	13	43	14	24	9	4	11	3	6	19	13	3.19	0.70	.114	32.5	W.
6	—2	20	52	15	32	3	5	13	3	9	16	22	5.85	1.14	.309	.....	W.
10	—4	20	47	17	34	ae	4	22	4.0	13.0	11.0	9.0	2.12	0.66	.076	.....	.....
15	.....	5	43	17	34	af	8	ff	.....	.....	.....	4	1.30	0.40	.046	.....	W.
15	.....	p	45	19	32	af	7	11	.....	.....	.....	10	2.98	0.50	.106	25.5	.....
10	—4	20	54	17	27	6	4	22	6	21	1	4	0.92	0.42	.033	8.8	N.
15	.....	20	45	17	30	7	7	22	4	9	15	9	2.49	0.60	.089	21.8	S.
10	—1	20	50	17	34	27	5	22	2	9	17	18	2.93	0.66	.105	24.2	S. E.
15	—21	21	54	18	51	6	.....	20	4.8	8.3	14.9	13.6	4.69	2.16	.168	.....	N. W.

mograph. Report received too late to be used in computing means. The means from the tri-  
 (7 A. M. + 2 P. M. + 9 P. M. + 9 P. M.) + 4.  
 (k) 6, 7; (m) 6, 7, 10, 15; (n) 7, 15; (p) 5, 20; (q) 5, 21; (r) 20, 21; (s) 5, 20, 23; (t) 5, 23; (u) 5, 6;  
 7, 27; (af) 25, 28; (eb) 7, 12, 22; (ec) 18, 22; (ed) 4, 11, 18, 20, 22; (ee) 17, 23; (ef) 4, 23; (ec) 1, 15,  
 18, 24.



## DAILY AND MONTHLY MEAN

STATIONS.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<i>Western Plateau...</i>	29	23	27	6	11	31	21	10	21	25	27	23	27	22
<i>Alfred Centre.....</i>	28	20	26	4	14	30	28	8	18	22	26	19	26	27
<i>Angelica.....</i>	22	23	27	6	10	32	26	9	22	26	26	18	24	24
<i>Friendship.....</i>	22	24	28	7	12	32	28	8	20	24	26	20	25	22
<i>Humphrey.....</i>	21	21	22	6	13	32	14	8	20	24	26	23	28	22
<i>Arkwright.....</i>	23	24	24	5	18	35	18	2	23	29	24	15	30	24
<i>Sherman.....</i>	25	24	20	5	12	38	21	14	29	28	20	30	30	29
<i>Elmira.....</i>	26	16	23	2	9	31	14	6	24	22	28	20	25	28
<i>LeRoy.....</i>	.....	19	28	8	15	32	20	11	.....	26	30	25	28	22
<i>Mount Morris.....</i>	23	20	24	10	15	22	24	7	22	25	25	26	28	25
<i>Lockport.....</i>	27	23	27	13	12	32	8	8	21	24	26	21	27	23
<i>Victor.....</i>	28	22	28	5	7	26	24	12	18	28	26	23	25	30
<i>Wedgewood.....</i>	.....	26	22	12	9	29	28	22	21	29	20	26	29	25
<i>Addison.....</i>	23	24	29	8	8	28	27	10	20	28	28	20	26	26
<i>South Canisteo.....</i>	20	19	26	0	10	31	22	6	20	22	24	18	27	28
<i>Arcade.....</i>	20	18	22	2	8	28	20	8	18	22	26	22	26	28
<i>Italy Hill.....</i>	.....	25	24	28	11	6	24	26	11	17	25	27	25	20
<i>Eastern Plateau...</i>	20	26	32	11	6	26	27	10	24	40	28	21	28	28
<i>Binghamton.....</i>	24	23	29	10	7	23	24	9	14	30	24	24	24	26
<i>Oxford.....</i>	29	29	24	6	5	24	30	6	12	22	26	28	26	30
<i>Cortlandt.....</i>	27	27	32	17	7	25	28	8	18	24	26	24	26	24
<i>South Kortright.....</i>	25	23	26	8	4	26	24	5	10	32	23	22	22	24
<i>Brookfield.....</i>	.....	25	30	32	17	8	20	32	14	20	26	27	30	22
<i>Middletown.....</i>	25	21	32	14	6	19	27	14	17	37	24	25	30	32
<i>Port Jervis.....</i>	20	22	27	8	1	19	26	8	17	36	24	25	24	28
<i>Cooperstown.....</i>	26	24	29	9	6	26	25	8	14	36	24	25	24	26
<i>New Lisbon.....</i>	18	20	20	8	5	21	28	6	12	35	27	24	24	30
<i>Quaker Street.....</i>	.....	28	24	27	9	9	28	25	8	18	24	27	20	24
<i>Perry City.....</i>	20	22	24	14	9	26	26	16	19	40	20	24	28	26
<i>Waverly.....</i>	22	18	27	8	8	26	25	16	16	24	25	23	25	29
<i>Newfield Summit.....</i>	26	28	26	16	8	20	22	20	22	33	20	22	30	23
<i>Minnewaska.....</i>	.....	21	21	6	-2	20	12	7	16	30	23	20	21	26
<i>Northern Plateau...</i>	22	16	18	-3	0	24	18	2	18	31	19	21	26	32
<i>Lyon Mountain.....</i>	18	20	18	.....	-4	17	21	4	18	21	24	19	18	26
<i>Ambersand.....</i>	.....	20	23	24	8	-1	14	26	8	12	24	28	20	22
<i>Axton.....</i>	21	20	21	10	0	20	23	16	15	21	22	22	19	25
<i>Gloversville.....</i>	20	19	22	6	-1	22	25	8	16	32	22	24	22	24
<i>Constableville.....</i>	22	18	21	16	-4	24	20	4	16	29	23	16	21	26
<i>Lowville.....</i>	20	18	22	2	-2	22	24	4	.....	30	22	18	22	24
<i>Number Four.....</i>	.....	20	22	24	12	28	24	21	26	40	28	22	22	28
<i>Turin.....</i>	20	24	28	16	13	31	35	20	29	43	28	32	32	40
<i>Coast Region.....</i>	26	22	24	28	12	27	33	22	25	38	29	32	34	40
<i>New York city.....</i>	32	32	35	24	12	25	35	22	28	38	38	31	30	38
<i>Willett's Point.....</i>	30	32	34	24	12	28	34	20	24	42	37	32	33	35
<i>Brentwood.....</i>	.....	25	28	30	14	5	21	20	14	19	28	28	30	33
<i>Betauket.....</i>	22	26	24	8	2	20	28	14	19	38	33	28	28	32
<i>Hudson Valley.....</i>	23	25	26	16	1	18	28	9	16	33	33	23	22	30
<i>Albany.....</i>	25	27	29	9	4	20	29	12	18	35	33	27	29	34
<i>Lebanon Springs.....</i>	.....	20	28	81	17	11	19	32	16	18	26	29	24	24
<i>Honeymead Brook.....</i>	25	30	28	26	6	22	34	19	20	40	40	34	33	33
<i>Poughkeepsie.....</i>	31	31	34	12	7	32	30	16	24	43	31	31	33	38
<i>West Point.....</i>	28	28	32	12	5	18	29	15	20	38	34	26	29	32
<i>Boyd's Corners.....</i>	24	28	31	14	5	21	31	14	19	37	33	24	30	34
<i>Carmel.....</i>	.....	20	20	4	4	24	20	8	19	32	22	24	24	27
<i>Rondout.....</i>	22	17	15	-2	9	28	15	8	24	31	23	22	22	26
<i>Peekskill.....</i>	19	22	24	10	0	20	25	8	14	34	24	22	26	28
<i>Mohawk Valley.....</i>	.....	16	18	16	6	-2	18	25	6	15	26	26	18	22
<i>Rome.....</i>	14	15	10	-2	-2	14	24	3	18	19	28	18	19	18
<i>Utica.....</i>	.....	16	18	16	6	-2	18	25	6	15	26	26	18	22
<i>Champlain Valley.....</i>	.....	14	15	10	-2	-2	14	24	3	18	19	28	18	19
<i>Plattsburgh Bar'ks.....</i>	.....	18	22	22	15	-2	23	26	8	12	24	20	16	27
<i>Saratoga.....</i>	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
<i>Glens Falls.....</i>	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

# STATE METEOROLOGICAL BUREAU.

## TEMPERATURES FOR FEBRUARY, 1893.

15	16	17	18	19	20	21	22	23	24	25	26	27	28	Monthly Mean
37	33	12	17	19	4	10	19	24	23	24	22	20	28	21
37	32	8	14	16	1	6	15	19	22	22	22	22	27	20
37	24	11	16	18	3	6	15	20	22	22	22	18	31	27
40	26	13	18	21	4	11	18	23	23	26	23	20	34	25
34	25	11	16	18	-1	10	20	24	25	28	23	30	30	21
34	20	14	16	13	0	16	16	20	22	28	28	28	32	27
43	30	16	21	24	3	17	15	23	21	24	19	28	32	28
33	21	12	16	21	2	10	21	31	27	28	25	23	28	19
39	28	15	20	22	2	10	22	25	21	23	19	14	28	28
35	22	14	19	20	7	10	22	26	26	23	21	14	26	22
38	22	12	14	20	6	8	21	24	20	23	18	20	30	22
38	26	10	15	22	7	8	21	25	20	25	25	15	24	22
41	30	16	19	24	8	8	18	22	22	26	26	21	23	22
40	26	12	16	22	4	8	23	25	28	26	22	21	23	22
35	20	8	16	14	-1	8	18	22	24	26	23	18	25	1
33	19	9	15	16	10	10	16	22	20	21	14	19	31	1
38	28	12	16	20	9	11	18	23	22	20	20	17	16	2
38	27	13	16	17	11	11	18	23	22	17	18	13	20	2
36	26	10	16	20	8	10	16	24	16	18	20	13	16	2
37	25	10	19	22	9	10	16	23	23	22	22	14	21	2
38	28	13	18	20	10	10	20	24	23	23	19	16	13	2
32	24	6	14	20	9	10	12	22	20	17	20	14	13	2
42	33	19	16	28	10	11	22	27	26	20	26	24	18	2
42	34	20	18	23	16	11	22	26	18	17	23	20	14	2
36	26	7	15	18	11	11	18	22	15	20	19	13	11	2
37	28	10	15	18	11	11	16	22	18	15	16	14	13	2
36	25	10	15	18	10	10	18	20	18	17	14	18	13	2
38	23	10	15	23	8	11	18	23	16	17	20	12	19	2
42	33	16	19	23	5	11	22	24	20	24	16	20	20	2
35	24	13	20	5	8	11	22	26	22	24	10	24	18	2
36	32	13	12	24	4	11	15	20	22	22	22	19	18	2
32	17	3	13	15	7	11	15	19	12	13	17	13	15	2
31	11	0	14	16	4	11	13	14	10	14	16	15	25	2
34	15	0	12	18	6	11	14	16	12	12	18	17	14	2
36	26	10	14	16	10	11	22	22	19	17	18	18	10	2
32	16	8	12	16	6	13	14	20	8	11	17	10	11	2
35	21	2	16	15	9	11	14	21	12	15	18	10	12	2
25	15	-2	13	13	5	11	16	17	10	14	16	8	19	2
31	17	3	12	14	8	6	14	20	10	14	19	11	15	2
42	36	23	24	26	19	16	29	28	33	29	20	28	27	2
44	42	18	23	29	12	17	30	30	34	34	30	31	28	2
39	26	22	26	26	20	18	25	27	32	28	30	32	28	2
44	37	25	22	22	22	15	30	27	34	28	30	24	24	2
41	38	25	23	27	23	15	30	28	33	28	29	26	28	2
42	33	16	19	24	13	13	20	26	25	21	25	20	18	2
42	32	10	16	21	4	11	21	26	20	15	25	22	14	2
40	30	12	19	20	13	11	18	25	20	20	23	15	17	2
43	33	11	19	23	7	11	22	24	20	18	24	18	17	2
44	33	21	18	23	20	11	10	24	25	25	23	14	10	2
42	40	25	19	26	26	11	18	28	30	20	28	24	19	2
42	36	17	22	30	8	11	25	28	30	23	28	21	26	2
39	32	13	18	24	8	11	22	26	26	18	26	21	20	2
44	31	16	20	24	18	11	22	28	28	28	26	27	25	2
30	18	8	16	17	6	11	17	20	18	16	18	19	20	2
25	8	6	16	12	0	11	16	18	21	14	14	21	22	2
36	27	10	15	22	11	11	18	23	20	18	21	17	17	2
38	28	6	12	16	7	11	13	19	10	11	18	17	13	2
37	24	4	9	14	3	11	7	16	9	10	17	20	16	2
38	33	9	16	18	11	11	19	23	13	13	18	14	10	2

## DAILY AND MONTHLY MEAN

STATIONS.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<i>St. Lawrence Valley</i>	18	19	8	0	-1	20	21	8	22	33	22	22	24	28
Malone.....	18	6	6	0	-8	18	22	2	18	32	13	19	22	29
Madison Barracks..	22	12	15	2	8	18	25	12	24	28	28	25	26	28
Watertown .....	26	16	14	4	6	24	24	12	26	33	24	24	27	28
Canton.....	13	10	3	-2	-6	18	20	6	22	35	23	22	23	28
North Hammond ..	14	13	3	0	1	27	15	11	24	36	24	22	24	25
Ogdensburg.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	22	31
Potsdam .....	12	12	4	-2	-6	16	22	4	20	35	24	20	21	27
<i>Great Lakes</i>	26	23	24	9	12	33	22	9	28	36	28	25	27	33
Dunkirk.....	31	22	22	8	18	38	24	10	23	34	26	24	27	36
Buffalo.....	20	18	24	6	18	34	18	8	22	36	26	24	30	38
Eden Centre .....	24	40	14	18	18	36	32	5	20	45	38	24	21	30
Brockport .....	28	24	22	12	12	34	20	8	23	36	28	26	28	32
Rochester .....	29	17	23	6	11	32	18	10	22	37	28	26	29	32
Fort Niagara.....	30	26	21	12	16	33	29	12	24	38	28	26	29	32
Hess Road Station.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Baldwinsville.....	24	20	22	2	4	34	18	10	28	33	24	26	25	33
Albion.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Oswego .....	25	15	26	4	4	26	20	11	18	33	25	24	28	31
Palermo .....	22	20	24	8	2	24	27	10	12	33	24	23	25	26
Lyons.....	29	26	27	11	13	32	19	11	22	36	30	26	28	33
Erie, Pennsylvania.	37	22	34	8	20	39	17	9	26	34	25	26	30	38
<i>Central Lakes</i>	26	24	28	12	11	30	26	13	19	35	29	25	26	32
Fleming.....	30	26	22	12	10	30	26	15	18	34	29	24	26	32
Geneva.....	26	24	28	12	12	30	25	12	18	27	30	24	26	32
Watkins.....	28	24	31	12	10	30	24	14	20	40	25	26	23	33
Romulus.....	28	24	23	13	11	30	28	12	20	36	30	24	26	32
Hammondsport.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ithaca.....	26	24	30	12	11	29	28	12	19	38	29	26	28	32
Monthly mean..	24.0	22.2	28.7	9.1	5.6	24.9	23.7	10.7	19.7	34.0	27.7	24.3	25.5	30.1

\* Means of tri-daily observations. † Mean of the maximum and minimum by the Draper and minimum of the ordinary self-registering thermometers. The means from the tri-daily received too late to be used in computing averages.

## STATE METEOROLOGICAL BUREAU.

59

## TEMPERATURES FOR FEBRUARY, 1893—(Concluded).

15	16	17	18	19	20	21	22	23	24	25	26	27	28	Monthly mean.
32	17	4	10	15	1	4	15	17	12	18	19	14	20	15.7
34	14	0	10	10	3	4	12	12	6	13	16	12	22	13.0
27	26	8	11	17	-2	4	10	23	18	24	20	16	18	17.5
34	20	6	14	20	8	8	18	20	13	24	22	13	22	19.1
32	14	3	8	18	2	4	16	17	12	16	20	14	18	14.6
32	16	5	14	15	-2	5	18	18	17	17	22	16	20	16.1
32	14	3	8	11	-5	2	18	14	12	17	14	16	28	.....
32	16	2	6	17	2	2	14	15	9	15	18	12	16	13.8
36	24	18	18	20	6	13	20	24	21	23	20	18	29	22.0
38	24	16	18	16	2	10	18	24	20	24	18	17	34	22.2
34	23	15	16	17	2	11	22	23	19	18	15	21	32	21.0
40	24	18	22	18	5	9	17	24	26	24	18	22	40	24.0
39	24	14	21	.....	8	.....	22	23	20	22	21	17	29	22.8
36	25	12	18	21	3	10	22	24	19	23	22	17	30	21.4
40	27	18	20	24	11	23	24	24	25	23	20	19	32	25.0
30	16	8	18	14	4	14	20	23	22	23	18	16	24	19.8
34	26	7	16	22	5	14	20	22	14	23	23	16	21	19.8
32	24	8	14	20	12	12	18	26	17	21	18	13	17	19.0
36	26	11	17	24	12	13	20	25	22	24	23	18	25	22.8
35	26	20	20	22	3	12	20	32	25	26	21	24	38	24.0
38	27	12	17	22	10	12	18	25	23	20	23	18	22	22.3
33	24	11	16	19	10	12	16	24	19	18	21	18	21	21.3
40	27	12	18	23	8	14	18	26	22	20	22	18	20	21.9
38	23	14	17	23	7	10	18	27	26	18	19	17	22	22.3
39	27	12	16	22	11	12	20	24	22	22	23	18	24	22.8
38	28	12	16	22	10	14	20	24	25	22	26	18	22	23.0
36.5	25.1	10.8	16.2	19.4	8.2	9.8	18.4	22.5	20.1	19.5	21.2	18.4	20.8	20.5

thermograph. Means for all stations not otherwise indicated are derived from the maximum observations are derived by the formula  $(7 \text{ A. M.} + 2 \text{ P. M.} + 9 \text{ P. M.} + 9 \text{ P. M.}) \div 4$  Reports

## DAILY AND MONTHLY PRECIPITA

STATIONS.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<i>Western Plateau..</i>	0.31	0.28	0.18	0.02	0.00	0.52	0.11	0.01	0.06	0.52	0.01	T.	0.21	0.01
Alfred Centre.....		.40	.70			.55								
Angelica.....	.20	.45	.35			.55	.10	T.	.10	.42	.05		.40	T.
Bolivar.....														
Friendship.....	.35	.24	.17	.06		.65	.19	T.	T.	1.60	T.		.28	
Humphrey.....	.25	.20	.26	.10		1.29	.10	T.	*	+1.70	T.		.26	
Little Valley.....														
Cherry Creek.....	.58	1.21	.31	.07		1.19	.45	.05	.10	1.48	.02		.10	
Elmira.....	.27	.24				.24			.05				.33	
Akron.....	.50	.09	.42	.02		.52	.15	.01	*	*	+ .82			T.
LeRoy.....														
Avon.....	.10	.12	.02			.14	.07	.03		.18				
Mt. Morris.....														
Lockport.....	.10	.10	.15			.48	.25		.10	.55	T.			.11
Victor.....														
Wedgewood.....	.10	.20	.07			.08	.06		.02	.23	.05		.60	
Addison.....	.62	.22	.03			.14			.06	.25	T.		.42	
Atlanta.....	.02	.01	.03	.01		.15				.34		.01	.03	
Pine City.....														
South Canisteo.....	.70	.25	T.	.07		.40	T.		.20	.40	T.		.45	
Arcade.....	.57	.23	.05	.02		1.02	.11	.04	.15	.75	.05		.05	T.
Attica.....														
Varysburg.....														
<i>Eastern Plateau ..</i>	0.36	0.09	0.08	0.01	0.00	0.42	0.07	0.00	0.01	0.44	T.	0.00	0.61	0.08
Binghamton.....	.25	.30	.10			.39				.52			.50	.20
Chenango Forks.....	.30		.05			.50	.25						.65	
Oxford.....	.14		.15	.10		.54	.20		T.	.68	T.		.45	.10
Cortland.....	.39	.10				.75	.13						.45	
Deposit.....	.40	.80	.05			.15				.50			.10	
South Kortright.....	.22		.14			.78				.73			.41	
Brookfield.....	.30		.02			.09	.06			.10			.60	
Apulia.....														
Middletown.....	.79		.15			.25	.20			.60			1.32	.03
Port Jervis.....	.88					.46				.84			.92	
Warwick.....														
Cooperstown.....	.18	.09	.24			.90				.95			.40	
New Lisbon.....	.29	.10	.08	T.		.63	T.		.10	.87			.46	.20
Quaker street.....													1.20	
Perry City.....	.37	.15	.05			.11	T.		T.	.22	.02		.55	
Liberty.....														
Newark Valley.....	.68	.05	.14			.34			.05	.18			.40	
Waverly.....	.36	.19	.02			.18	.09			.15			.51	
Ellis.....	.23	.11	.01	.01		.09	.18			.20			.33	.02
McLean.....														
Newfield Summit.....														
Minnewaska.....	*	*	+1.30			1.00				1.00			1.10	
<i>Northern Plateau..</i>	0.04	0.03	0.39	0.07	0.00	0.72	0.18	0.00	0.04	0.44	T.	T.	0.11	0.07
West Chazy.....		.02	.50			.23	T.			.21				
Au Sable Forks.....														
Keene Valley.....														
Ampersand.....			.50			.80				.10	T.			
Hiawatha House.....														
Gloversville.....	.22	.02	.53			1.27	.27			.85				.48
Blue Mt. Lake.....														
Bisby Lodge.....														
Constableville.....		.10	.20			.46	.20		.10	.25			T.	
Lowville.....	.06		.26	.24		.42	.40			1.06				
Number Four.....		.12	.08	.40		.40	.16							
Turin.....	T.	.08	.75			1.19	.61			.22		T.		.15
Galway.....	T.		.52			1.06				.45			.60	
Kings Station.....	.10		.20			1.15			.30	.85			.40	

## TION FOR FEBRUARY, 1893 — (INCHES).

15	16	17	18	19	20	21	22	23	24	25	26	27	28	Total.
0.09	T.	0.14	0.17	0.14	0.04	0.05	0.26	0.22	0.22	0.04	T.	T.	0.11	3.88
T.	T.	.20	.30	.20	T.	.30	.40	.50	11.20		T.		.80	4.18
.04	T.	.12	.12	.20	.06	T.	.20	.08	.23	.01	.01		T.	4.96
.30		.12	.07	.20			.15	.32	.10	.05			.05	5.52
.35	T.	.05	.17	.75	.07	.04	.63	.15	1.29	.03	.06		.07	9.22
.24	T.	.10	.24	.12	.09	T.	.24	.41	.01	.23	T.		.17	1.61
			.31				.17							4.88
			.30	.15	.12	.03	.20	.30	.50	.60		T.		6.86
	T.	.20	.25	T.	.20	T.	.30	.40	.30				.37	2.86
T.		.10	.30	.10		T.	.40	T.	.15	.05			.03	3.86
.06	.01	.14	.08	.03	.04	.01	.20	.03	.03	.05			.02	2.49
		.03	.03				.04	.01	.05	.02				2.27
.05	T.	.30	.08	.15	T.	T.	.30	.20	T.	.08			T.	0.86
.24		.06	.10	.13	.10	.08	.22	.21	.13	.08			.01	3.78
														4.60
0.03	T.	0.07	0.53	0.04	0.03	0.02	0.83	0.08	0.11	0.13	0.01	0.00	0.11	4.22
.25		.60	.10	T.			.60			.20			.20	4.16
.05	T.	.10	.40		.15		.60	.20	.15	.20	T.		.26	3.80
.05			.43		.14		.46							4.47
			.50		.20		.80		.20	.10	.20		.20	2.90
.16			.59				.84	.22		.13				3.70
.01			.40				1.00	.30	.40				.01	4.22
			.70	.30			1.66			.20			.40	3.29
			.58	.08			1.34			.14			.30	6.60
.01		.05	.35	.08	.05		1.00	.05	.37	.12			.15	5.54
	T.	.08	.43	.04	T.	.15	.85	.12	.16	.10			.20	4.99
			.90				2.00		.40	.40				4.86
T.	T.	.10	.32	.06		.09	.46	.15	.08	.02			.05	4.90
T.		.15	.19			.10	.40	T.		.13			.05	2.80
		.13	.30	.07		.08	.50	.02		.10			.03	2.86
.03			.10	.03	.02		.24	.03	.04	.06			.02	2.73
			1.75				*	12.00						1.75
0.13	T.	0.11	0.41	0.13	0.32	T.	0.75	0.04	0.30	0.01	0.05	T.	0.22	8.15
.06	.02		.35	.32	.08		.56	T.	T.				.09	4.59
T.	T.		.30	.10	.45		.60	T.	.20	.10	.10			2.44
.31	T.	T.	.58	.20	.30		1.13	T.	.35		T.		.30	2.75
.28	T.		.80	.40			.20						.40	6.81
.25	T.		.25	.17			.14	.06	.23		.03		.51	3.39
.29	T.	.05	.70	T.	.28		.41	.33			.26		T.	4.08
		.90			.80	T.	.64	T.	.83		.04	.03		2.44
			.70		.30		1.5		.60				.30	6.33
					.70		1.60		.50				.35	6.22
														6.85

## DAILY AND MONTHLY PRECIPITA

STATIONS.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<i>Coast Region</i> .....	0.48	0.45	0.06	0.00	0.00	0.58	0.21	0.00	0.00	0.23	T.	0.00	1.77	0.04
New York city .....	.30	.59	.06	.....	.....	.58	.20	.....	.....	.45	T.	.....	1.86	.07
Willet's Point .....	1.00	.60	.....	.....	.....	.60	.40	.....	.....	.85	.....	.....	1.82	.....
Brentwood .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Setauket .....	.40	.31	.07	.....	.....	.35	.30	.....	.....	1.16	T.	.....	2.16	.02
Bedford .....	.22	.31	.13	.....	.....	.81	.04	.....	.....	1.26	.....	.....	1.28	.15
<i>Hudson Valley</i> .....	0.17	0.17	0.14	0.00	0.00	0.49	0.37	T.	0.01	0.77	0.00	0.00	0.94	0.19
Albany .....	.11	.09	.14	.....	.....	.13	.22	.....	.....	.11	.....	.....	.90	.30
Bethlehem Centre .....	.....	.....	.32	.....	.....	.10	.29	T.	.....	.06	.....	.....	1.00	.....
Lebanon Springs .....	.06	.....	.32	.....	.....	.10	.29	T.	.....	.06	.....	.....	1.00	.....
Honeymead Brook .....	.40	.01	.42	.....	.....	.88	.42	.....	.10	1.24	.....	.....	.65	.30
Fawling .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Poughkeepsie .....	.....	.62	.17	.....	.....	.78	.73	.....	.....	.79	.....	.....	.95	.48
Wappinger's Falls .....	.28	.34	.18	.....	.....	.74	.33	.....	T.	.56	.....	.....	1.49	.11
West Point .....	.30	.12	.....	.....	.....	.18	.95	.....	.....	.73	.....	.....	.71	.35
Boyd's Corners .....	*	†.58	.11	.....	.....	*	†1.14	.....	.....	.92	.....	.....	*	†1.50
Carmel .....	*	†.65	.13	.....	.....	*	†1.09	.....	.....	.97	.....	.....	*	†1.53
<i>S. East Reservoir</i> .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Schodack Depot .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Rondout .....	*	†1.01	.....	.....	.....	1.15	.....	.....	.....	1.45	.....	.....	1.20	.....
Easton .....	.05	.....	.....	.....	.....	.59	.....	.....	.....	.24	.....	.....	.65	.....
Peekskill .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
<i>Mohawk Valley</i> .....	0.16	0.07	0.38	0.78	0.00	?	?	0.14	0.00	0.16	0.16	0.00	?	?
Rome .....	.21	.04	.31	1.37	.....	*	†2.13	.21	.....	.30	.33	.....	*	†.37
Utica .....	.11	.10	.45	.08	.....	1.40	.11	.06	.....	.83	.....	.....	.42	.22
<i>Champlain Valley</i> .....	T.	0.00	?	?	0.00	0.40	0.00	0.00	0.00	0.47	0.00	0.00	T.	0.16
Plattsburgh .....	T.	.....	.45	.....	.....	.....	.....	.....	.....	T.	.....	.....	T.	.....
Plattsburgh Barr'ks .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Port Henry .....	.....	.....	*	†.38	.....	.81	.....	.....	.....	.94	.....	.....	.....	.38
Glens Falls .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Whitehall .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
<i>St. Lawrence Val'y</i> .....	0.04	0.01	0.23	0.04	0.00	0.33	0.18	0.01	0.04	0.29	0.00	T.	0.00	0.03
Malone .....	.....	.....	.30	.10	.....	.37	.41	.....	.....	.12	.....	T.	.....	.....
Madison Barracks .....	.11	.04	.....	.16	.....	.15	.11	.....	.20	.....	.....	.....	.....	.....
Watertown .....	.10	.....	.50	.....	.....	.41	.17	.06	.07	.58	.....	.....	.....	.....
Canton .....	.05	.....	.....	.....	.....	.15	.04	.....	.07	.20	.....	.....	.....	.....
<i>DeKalb Junction</i> .....	.....	.....	.35	.....	.....	.48	.15	.....	.....	.28	.....	.....	.....	.....
North Hammond .....	T.	.03	.08	.....	.....	.40	.18	.01	.....	.30	.....	T.	.....	.....
Ogdensburg .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Potsdam .....	.....	.....	.40	.....	.....	*	†.30	.....	.....	.62	.....	.....	.....	.....
<i>Great Lakes</i> .....	0.29	0.13	0.22	0.04	0.02	0.61	0.18	0.07	0.21	0.24	0.01	T.	0.05	0.06
Dunkirk .....	.47	.12	.45	.....	.....	.93	.13	T.	.20	.51	T.	.....	.07	.02
Buffalo .....	.32	.12	.42	T.	.....	.61	.18	T.	.09	.65	T.	.....	.....	T.
Eden Centre .....	.35	.20	.....	.....	.....	1.64	1.20	.....	.20	1.00	.....	.....	.10	.....
<i>Adams Centre</i> .....	.....	.....	.45	.....	.....	.....	.14	.13	.....	.12	.....	.....	.....	.....
Brockport .....	.15	.19	.15	.10	.....	.45	.15	.01	.13	.14	.13	.....	.....	T.
Rochester .....	.12	.02	.22	.07	.....	.35	.16	T.	.01	.12	.01	T.	.....	T.
Fort Niagara .....	.....	.65	.....	.....	.....	*	†.40	.....	.60	.....	.....	.....	.....	.09
Hess Road Station .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
<i>Baldwinsville</i> .....	.30	.10	.30	.....	T.	1.25	.....	.....	.57	.30	T.	.....	.10	.50
Albion .....	1.07	.03	T.	.....	.....	.05	.06	.....	T.	.06	T.	.....	.....	.....
Lyndonville .....	.29	.03	.27	.02	.....	.18	.....	.18	.30	.....	.....	.....	.28	.....
Demster .....	.06	.03	.15	.01	.....	1.00	.....	.12	.....	.25	.....	.....	.....	.....
Oswego .....	.08	.02	.23	.02	T.	.73	.10	.04	.02	.08	T.	T.	.....	.03
<i>Palermo</i> .....	.01	.....	.10	.35	.....	.20	.05	.65	.17	.....	.....	.....	.....	.03
Phoenix .....	.08	.10	.15	.....	.26	.50	.20	.....	.17	.....	.....	.....	.15	.10
Lyons .....	.35	.08	.06	.10	.....	.10	.11	.....	.06	.....	.....	.....	.....	.05
Erie, Pennsylvania .....	1.01	.32	.57	.02	.....	1.14	.19	T.	.74	.88	.01	T.	.06	.12

TION FOR FEBRUARY, 1893 — (INCHES) — (Continued).

15	16	17	18	19	20	21	22	23	24	25	26	27	28	Total.
0.00	0.03	0.18	0.66	T.	0.09	0.00	1.48	0.00	T.	0.07	0.00	0.00	0.24	7.32
		.38	1.37		T.		1.50		T.	.06			.89	7.81
	.11						1.52			.05			.15	7.10
		.22	.46	.02	.25		1.17			.09			.23	7.11
		.11	.79	.10	.10		1.73			.08			.81	7.27
0.02	T.	0.04	0.89	0.05	0.06	0.00	1.66	T.	0.07	0.14	T.	0.00	0.21	6.92
	T.	T.	.02	T.	.13		1.48	.02	.23	.09	T.		.06	4.63
T.	T.		1.14	.8	*	†1.12	.80	*	†.04	*	†.12		.12	6.12
.06		.20	.60	.06	.14		1.50		T.	.25			.20	7.43
.06		.07	.68	T.	.02		1.00	T.		.16	.04		.21	6.78
.08		.18	.51	.02	T.		1.91		T.	.15	T.		.22	7.05
			1.60		.16		1.78			.10			.36	7.29
			1.10	T.	T.		2.60			.10				8.05
			.99				2.14			.09				7.59
														7.86
			1.00	*	†.30		2.00			.30			.30	8.71
			.64				1.35		.38	.06			.60	4.56
0.12	0.09	0.00	0.66	0.22	0.22	0.04	?	?	0.34	0.02	T.	0.00	0.00	7.42
.24	.18		.40	.25	.23	.06	*	†.48	.33	.03				7.04
			.92	.20	.21	.04	1.70	.16	.36	T.	T.			7.79
0.00	T.	0.00	?	?	0.15	0.00	1.04	0.10	0.16	0.00	0.00	0.00	0.18	3.52
	T.		*	†.38			.48	.30					.08	1.54
			.50		.30		1.60		.32				.32	5.50
0.08	T.	0.00	0.85	0.47	0.03	0.00	0.21	0.08	0.06	T.	T.	0.00	0.10	2.46
.14	T.		.25	.23	.11		.35	.04					.10	2.52
.21			.57	.40			.22		.12	.02			.04	2.35
.15	T.		.23	.28	.13		.23	.18	.08	T.	.01		.26	3.89
T.			.41	.63			.30	.02	.05				.09	1.94
.06			.21	.42			.15		.06				.05	2.21
			.25	.30			.20	.02	.08				.08	1.83
			.60	1.00									.07	2.99
0.12	0.07	0.12	0.27	0.22	0.09	0.03	0.22	0.21	0.20	0.03	0.05	0.02	0.18	3.99
.16		.06	.12	.17		.05	.07	.23	.20		T.		.08	3.99
.18	.02	.16	.25	.19	.06		.14	.40	.22	T.	.01		.15	4.21
.40		*	†1.20	.50		.10	.60	.80	.60		.10		.60	9.49
.20		.28		.45			.25				.45	.25	.27	3.87
.08	T.	.22	.25	.22			.22	.08	.65	.02			.18	3.52
.04	T.	.01	.54	.13	.24	.02	.38	.27	.35	.04	T.		.21	3.31
			.10					.40						2.24
T.	T.	.60	.70	.60	.20	.10	.20	.10	T.	.10			.36	5.78
			*	†1.25			.50	*	†1.20				.08	4.25
.19			.04				.03		.21				.21	2.23
.17			.18		.09	.03	.05	.04	.12	.08			.16	2.49
.06	T.	T.	.15	.11	T.	.01	.04	.08	.06	.05	.03		.15	2.11
.30		.02	.90	.25	.20		.22		.22	.12	.10		.10	3.99
	.08	.33	.54	.05	.07		.40		.32		.03		.29	3.75
		.70		.60			.55	.35		T.				3.19
.12		.06	.20	.11	.03		.21	.02	.32	.12	.01		.07	5.85



## DAILY AND MONTHLY PRECIPITA

STATIONS.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<i>Central Lakes</i> .....	0.23	0.03	0.06	T.	T.	0.15	0.03	T.	0.00	0.06	T.	0.00	0.34	0.03
<i>Fleming</i> .....													.30	
<i>Geneva</i> .....	.40		.25			.38							.21	.01
<i>Watkins</i> .....	.08	T.			T.	.02		T.					.42	
<i>Romulus</i> .....	.35	T.	T.		T.	.29	.08			T.			.25	T.
<i>Hammondsport</i> .....														
<i>Ithaca</i> .....	.32	.14	.03	T.		.07	.09	T.		.29	T.		.50	.16
<i>Penn Yan</i> .....														
Ave age.....	0.21	0.13	0.19	0.11	T.	0.47	0.15	0.02	0.03	0.47	0.02	T.	0.45	0.07

\* Amount included in next measurement.    † Not used in computing the average.    ‡ Record  
§ Formerly

TION FOR FEBRUARY, 1893 — (INCHES) — (*Concluded*).

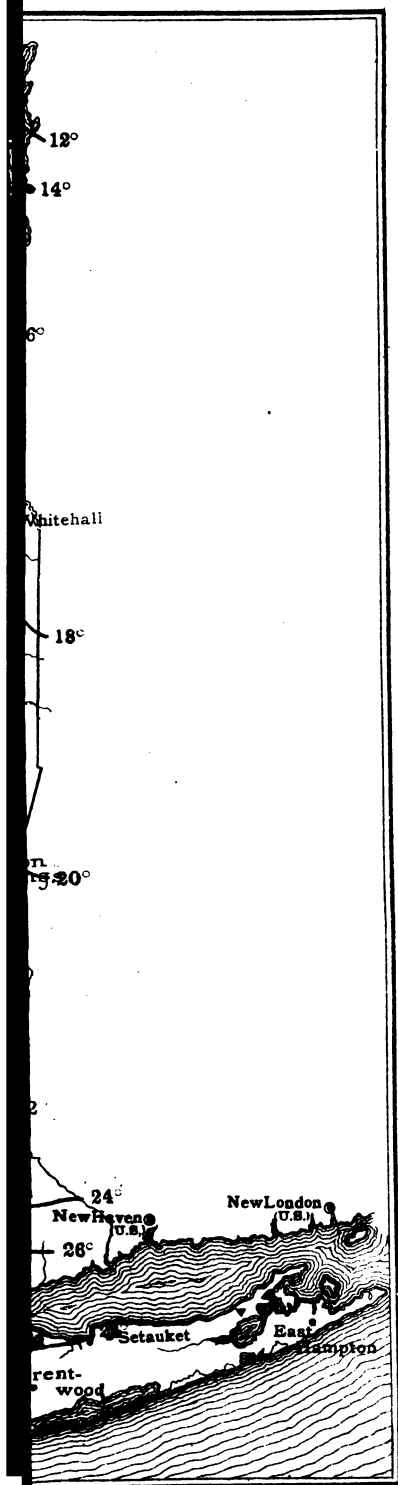
15	16	17	18	19	20	21	22	23	24	25	26	27	28	Total.
T.	0.09	0.02	0.31	T.	0.08	0.08	0.24	0.25	0.01	0.02	0.00	0.00	0.01	2.12
.....	.....	*	†.30	*	†.40	.....	.....	.30	.....	.....	.....	.....	.....	1.30
.....	T.	T.	.50	.....	.26	.37	.28	.32	.....	.....	.....	.....	T.	2.98
.....	.40	.....	.....	.....	T.	.....	T.	.....	T.	T.	.....	.....	T.	0.92
T.	.08	.....	.47	T.	T.	T.	.38	.60	.....	.....	.....	.....	.04	2.49
T.	T.	.10	.27	.02	.06	.03	.52	.05	.07	.08	.....	.....	.03	2.98
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
0.06	0.02	0.06	0.47	0.14	0.11	0.02	0.74	0.10	0.14	0.06	0.01	T.	0.14	4.64

for the month incomplete. | Reports too late to be used in computing the averages.  
 Blood's Depot.

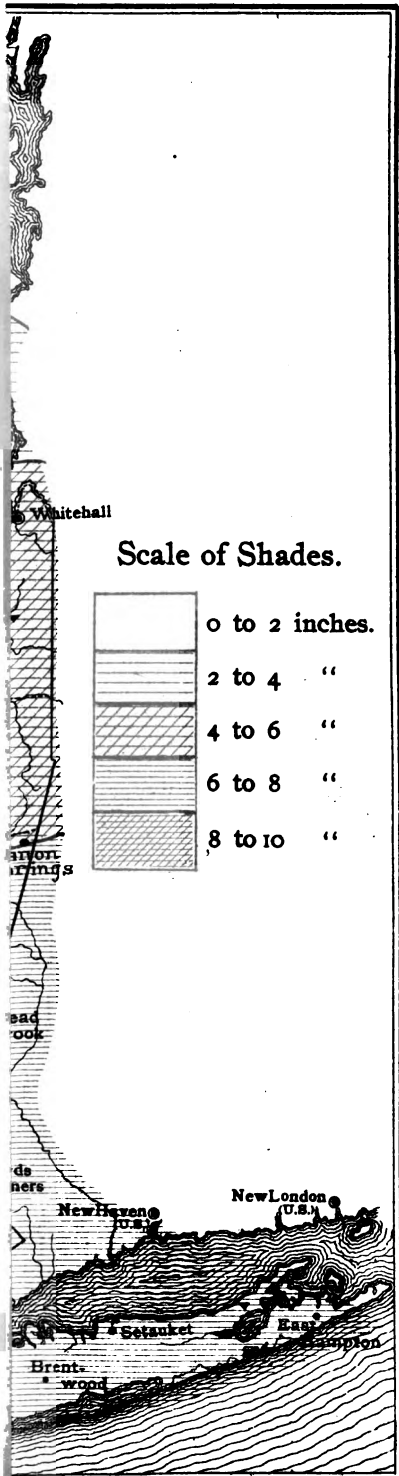
## TEMPERATURE AND RAIN

STATION.	County.	TEMPERATURE — (DEGREES FAHR.).									
		Normal for the month of February.	Length of record, years.	Record begins.	Record ends.	Mean for February, 1898	Departure from the normal.	EXTREMES OF MONTHLY MEAN TEMPERATURE FOR FEBRUARY.			
								Highest.	Year.	Lowest.	Year.
<i>Western Plateau</i> .....		24.8				22.7	-1.6				
Angelica*	Allegany	21.8	11	1855	1893	21.2	-0.6	33.6	1857	12.5	187
Humphrey	Cattaraugus	24.6	10	1884	1893	21.5	-3.1	33.2	1890	14.3	188
Elmira*	Chemung	26.5	15	1851	1893	25.5	-1.0				
<i>Eastern Plateau</i> .....		23.1				20.8	-2.2				
Cooperstown	Otsego	21.3	38	1854	1893	18.0	-3.3	31.7	1857	10.5	188
Waverly	Tioga	24.9	12	1889	1893	23.7	-1.2	32.1	1890	14.8	188
<i>Northern Plateau</i> .....		21.0				16.7	-4.5				
Keene Valley	Essex	20.7	7	1879	1891						
Lowville	Lewis	21.2	26	1827	1893	16.7	-4.5				
<i>Coast Region</i> .....		30.8				29.2	-1.6				
New York city	New York	31.7	22	1871	1893	29.7	-2.0	40.0	1890	22.0	75
Setauket	Suffolk	29.2	8	1885	1893	28.8	-1.1	37.6	1890	27.4	188
<i>Hudson Valley</i> .....		26.1				23.9	-2.3				
Albany	Albany	24.9	20	1874	1893	21.6	-3.3	38.0	1884	15.3	188
Honeymead Brook	Dutchess	25.7	10	1884	1893	21.9	-3.8	32.6	1890	15.9	188
Poughkeepsie*	"	23.9	33	1826	1893	22.8	-0.1	33.4	1828	18.7	188
West Point	Orange	28.9	61	1824	1893	26.6	-2.3	39.6	1842	18.2	188
Rondout*	Ulster	26.2	22	1828	1893	24.4	-2.0	36.0	1842	18.6	188
<i>Mohawk Valley</i> .....		22.7				19.3	-4.4				
Utica*	Oneida	22.7	33	1826	1893	19.3	-4.4	33.4	1828	18.7	188
<i>Champlain Valley</i> .....		19.1				13.8	-5.3				
Plattsburgh Barracks	Clinton	19.1	34	1839	1893	13.8	-5.3	26.4	1840	7.2	188
<i>St. Lawrence Valley</i> .....		19.5				15.5	-4.0				
Madison Barracks	Jefferson	22.5	32	1829	1893	17.5	-5.0	30.7	1840	14.2	188
Canton*	St. Lawrence	18.1	31	1862	1893	14.6	-3.5	26.5	1877	6.4	188
North Hammond	"	18.6	15	1866	1893	16.1	-2.5	26.1	1891	10.4	188
Potsdam*	"	18.7	25	1828	1893	13.8	-4.9	28.9	1828	9.5	188
<i>Great Lakes</i> .....		25.3				21.6	-3.7				
Buffalo	Erie	24.8	23	1871	1893	21.0	-3.8	32.6	1892	12.8	188
Rochester	Monroe	24.8	23	1871	1893	21.4	-3.4	32.6	1892	14.8	188
Fort Niagara	Niagara	27.4	26	1843	1893	25.0	-2.4				
Baldwinsville	Onondaga	24.8	19	1849	1893	19.8	-5.0				
Oswego	Oswego	24.9	22	1871	1893	19.8	-5.1	32.4	1892	12.7	188
Palermo	"	20.5	40	1854	1893	19.0	-1.5	27.5	1890	9.8	188
Lyons	Wayne	27.1	7	1860	1893	22.8	-4.3				
Erie, Pennsylvania	Erie	27.8	20	1874	1893	14.0	-3.8	36.0	1892	16.0	188
<i>Central Lakes</i> .....		25.8				22.4	-3.4				
Geneva*	Ontario	25.9	16	1854	1893	21.9	-4.0				
Ithaca	Tompkins	25.8	15	1879	1893	22.0	-2.8	32.1	1890	15.3	188
Average departure.....							-3.1				

\* Location of the instruments has been changed.









## FALL STATISTICS FOR FEBRUARY.

STATION.	County.	RAINFALL (INCHES).									
		Average for the month of February.	Length of record year.	Record begins.	Record ends.	Total for February, 1893.	Departure from the average.	EXTREMES OF MONTHLY PRECIPITATION FOR FEBRUARY.			
								GREATEST.		LEAST.	
								Amount.	Year.	Amount.	Year.
<i>Western Plateau</i> .....		2.27				3.83	+1.57				
Angelica.....	Allegany.....	1.54	10	1856	1893	4.37	+2.83	4.37	1893	0.10	1875
Humphrey.....	Cattaraugus.....	3.48	11	1883	1893	5.52	+2.04	7.30	1887	1.03	1889
Elmira.....	Chemung.....	1.78	16	1852	1893	1.61	-0.17				
<i>Eastern Plateau</i> .....		2.59				4.42	+1.83				
Cooperstown.....	Otsego.....	2.35	37	1854	1893	4.99	+2.64	5.21	1887	0.60	1886
Port Jervis.....	Orange.....	3.43	10	1880	1893	5.54	+2.11	5.54	1893	1.12	1892
Waverly.....	Tioga.....	1.98	12	1882	1893	2.73	+0.75	2.96	1883	0.88	1888
<i>Northern Plateau</i> .....		2.62				4.08	+1.46				
Keene Valley.....	Essex.....	2.62	7	1879	1891						
Lowville.....	Lewis.....	2.62	25	1827	1893	4.08	+1.46				
<i>Coast Region</i> .....		4.28				7.46	+3.18				
New York city.....	New York.....	3.96	23	1870	1893	7.81	+3.91	7.81	1893	1.27	1892
Setauket.....	Suffolk.....	4.65	8	1885	1893	7.11	+2.46	7.11	1893	2.19	1889
<i>Hudson Valley</i> .....		3.23				7.22	+3.99				
Albany.....	Albany.....	3.19	20	1874	1893	4.63	+1.44	6.36	1877	1.38	1885
Honeymead Brock.....	Dutchess.....	3.14	16	1884	1893	7.43	+4.29	7.43	1893	1.21	1892
West Point.....	Orange.....	3.41	44	1840	1893	7.29	+3.88	7.29	1893	0.63	1886
Boyd's Corners.....	Putnam.....	3.81	11	1866	1893	8.05	+4.24	8.05	1883	1.23	1892
Rondout.....	Ulster.....	2.62	23	1829	1893	8.71	+6.09	8.71	1893	0.80	1837
<i>Mohawk Valley</i> .....		3.24				7.79	+4.55				
Utica.....	Oneida.....	3.24	36	1826	1893	7.79	+4.55	7.79	1893	0.52	1830
<i>Champlain Valley</i> .....		1.43				1.54	-0.11				
Plattsburgh Barracks.....	Clinton.....	1.43	33	1840	1893	1.54	-0.11	3.55	1869	0.20	1840
<i>St. Lawrence Valley</i> .....		2.44				2.42	-0.01				
Malone.....	Franklin.....	2.61	13	1830	1893	2.52	-0.09				
Madison Barracks.....	Jefferson.....	2.05	31	1840	1893	2.35	+0.20	4.52	1851	0.30	1873
North Hammond.....	St. Lawrence.....	2.65	16	1865	1893	1.83	-0.82	4.96	1876	0.96	1874
Potsdam.....	St. Lawrence.....	2.43	24	1828	1893	2.99	+0.56	6.42	1890	0.03	1830
<i>Great Lakes</i> .....		2.80				3.62	+0.82				
Buffalo.....	Erie.....	2.91	23	1871	1893	4.21	+1.30	5.16	1876	0.46	1877
Rochester.....	Monroe.....	2.71	23	1871	1893	3.31	+0.60	5.40	1876	0.46	1877
Fort Niagara.....	Niagara.....	2.05	33	1841	1893	2.24	+0.19	4.12	1887	0.31	1877
Oswego.....	Oswego.....	2.48	23	1871	1893	2.11	-0.37	4.74	1881	0.22	1877
Palermo.....	Oswego.....	3.09	30	1860	1893	3.99	+0.90	7.20	1886	0.10	1877
Erie, Pennsylvania.....	Erie.....	3.54	20	1874	1893	5.85	+2.32	8.50	1887	0.33	1877
<i>Central Lakes</i> .....		1.86				2.96	+1.09				
Geneva.....	Ontario.....	1.66	22	1851	1893	2.98	+1.32	3.26	1853	0.17	1856
Ithaca.....	Tompkins.....	2.07	15	1879	1893	2.93	+0.86	4.21	1887	0.63	1886
Average departure.....							+1.77				

during the period covered by the record.



## Meteorological Summary for March, 1893.

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The average atmospheric pressure (reduced to sea-level and 32 degrees Fahr.) for the State of New York during March was 30.05 inches. The highest barometer was 30.62 inches, at Rochester and Albany on the twenty-ninth; and the lowest was 29.42 inches at New York city, on the fourth. The average of the mean pressures at six stations of the National Bureau was 0.06 inches above the normal value; the least departure being 0.04 inch at Erie, Pa., and the greatest, 0.07 inch at Albany and New York city. There was a general decrease of pressure from the southern toward the northern boundary of the State.

The mean temperature of the State, as derived from the record of seventy-three stations, was 29.5 degrees; the highest general daily mean being 40.4 degrees on the twenty-fourth, and the lowest 16.5 degrees on the sixteenth. The highest local monthly mean was 36.0 degrees at New York city; while the lowest, 23.2 degrees, was reported from Plattsburgh Barracks. The maximum temperature recorded during the month was 70 degrees at Erie, Pa., and Albion, on the sixteenth; and the lowest was 7 degrees below zero at Number Four, on the nineteenth. The mean monthly range of temperature was 47 degrees; the greatest range being 69 degrees at Eden Center, and the least 35 degrees at Rondout and Middletown. The mean daily range was 16 degrees; the greatest daily range being 46 degrees at Potsdam and Ampersand; the least range being 1 degree at Plattsburgh Barracks on the thirteenth, at Madison Barracks on the fifteenth, and at Waverly on the twenty-third. The mean temperatures for the various sections of the State were as follows: The Western plateau, 30.6 degrees; the Eastern plateau, 28.9 degrees; the Northern plateau, 25.3 degrees; the coast region, 34.8 degrees; the Hudson valley, 31.6 degrees;

the Mohawk valley, 28.2 degrees; the Champlain valley, 25.8 degrees; the St. Lawrence valley, 27.5 degrees; the Great Lake region, 31.0 degrees; and the Central Lake region, 31.2 degrees. The average of the mean temperatures at thirty stations possessing records for previous years was 0.2 degree below the normal value. The values were generally above the normal in the western part of the State, and below it in the eastern section.

The mean relative humidity was 76 per cent. The mean dew point was 24 degrees.

The average precipitation for the State was 2.43 inches of rain and melted snow. The maximum general precipitation ranged from four to five inches in the southeastern portion of the State, while the general minimum fell below one inch in the northern counties. The greatest local amount reported was 6.16 inches, at Eden Center, Erie county; and the least was 0.68 inch, at Plattsburgh Barracks. Heavy general precipitation occurred only on the ninth. Amounts to exceed 1.50 inches in twenty-four hours occurred on that date as follows: Wappinger's Falls, 2.20 inches; Setauket, 2.78 inches; Brentwood, 2.00 inches; Willet's Point, 2.20 inches; New York city, 1.81 inches, and Minnewaska, 1.75 inches. The total snowfall over the State averaged about eight inches. The heaviest general snowfall obtained over the Western plateau, the upper Mohawk valley, and on the highlands east of Lake Ontario; while the least amounts were recorded at stations of the St. Lawrence valley. More than the usual deposition of snow occurred in the vicinity of the Atlantic coast. The average total precipitation at twenty-six stations possessing records for previous years was 0.53 inches below the normal value. The few cases of excessive rainfall were confined mainly to the southeastern section.

The average number of days on which the precipitation amounted to 0.01 inch or more was 10.3. The number was above this average in the Great Lake region, the Mohawk valley, the coast region and the Western plateau; elsewhere the number was below the average.

The average number of clear days was 7.9; of partly cloudy days, 11.4; and of cloudy days, 11.7. The average cloudiness for the State was 56 per cent (overcast = 100 per cent).

The prevailing wind direction was from the southwest. The average total movement at six stations of the National Bureau and at Ithaca was 8,283 miles; the values being above the average for previous years at New York, Albany and Buffalo, and below it at Rochester.

Hail and sleet fell on the third, eleventh, fourteenth, twenty-first, twenty-second, twenty-third, twenty-fourth, thirtieth and thirty-first.

Solar halos were reported on the sixth, seventh, eighth, tenth, seventeenth, nineteenth, twentieth and twenty-seventh; and lunar halos on the second, twenty-second, twenty-eighth, twenty-ninth and thirty-first.

Thunderstorms were observed on Long Island on the ninth; in central Dutchess county on the twelfth; in Schuyler county and on Long Island on the fourteenth; on the twenty-fourth at nineteen stations distributed through all sections excepting the eastern-central and southeastern; and on the thirtieth a thunderstorm was noted in Steuben county.

The data for this summary have been obtained from the records of sixty-two Voluntary Observers, six stations of the National Bureau, five Military Posts, and eighteen special rain-fall observers.

During the month of March the weather of New York was influenced by eight areas of high, and twelve areas of low pressure; the latter number agreeing with the usual storm development for March of previous years. Seven of these depressions passed north of the State in their eastward course; four moved northward along the Atlantic coast; and the twelfth storm of the series had passed eastward as far as the upper lakes at the close of the month. The heaviest general rains occurred during the passage of the coast storms, and severe gales also accompanied these disturbances along the seaboard, and in the southeastern counties. The well developed cyclone which passed north of New York on the twenty-fourth was also

attended by high wind velocities in all parts of the State. The anticyclones passed over or near New York in the majority of cases; to which circumstance was due, in part, the high average barometric pressure exhibited by the tables, and a greater proportion of fair days than commonly occurs during March. The latter statement does not apply, however, to the region of the Atlantic coast, where both cloudiness and precipitation were above the general average for the State.

Five very general and marked fluctuations of temperature occurred during March; the average value for the month, however, differing but little from the normal. The colder periods were central about the fifth, seventeenth and twenty-eighth, coinciding with the passage of intense anticyclonic areas near the State, while the most marked excesses of temperature obtained throughout the second week in the month, and on the dates included between the twentieth and twenty-sixth. During the first of these periods heavy rains combined with high temperatures melted the snow rapidly, and caused a breaking up of the ice in streams of the central and southern section; severe floods resulting from these conditions on the ninth and tenth in tributaries of the Susquehanna, Delaware and Hudson rivers. In many localities of the southern tier the ground was thereafter left clear of snow, subject to the severe cold of the succeeding week, so that some damage to winter grains was anticipated. At the close of March the ice had disappeared from the main waterways of the State; but in the interior of the extreme northern section the lakes and streams were still frozen, and frost remained in the ground to a considerable depth.

The appearance of robins was first noted in central Long Island on the seventh; in the southern tier of counties between the fourteenth and eighteenth; and in the vicinity of Lake Ontario and the lower St. Lawrence valley between the twenty-second and twenty-fourth.

## METEOROLOGICAL DATA

LOCATION OF STATIONS.			BAROMETER.						HUMIDITY.		TEMP.		
STATIONS.	County.	Elevation, feet.	Mean.	Highest.	Date.	Lowest.	Date.	Monthly range.	Mean relative.	Dew point (degrees).	Mean of tri-daily observation.	Mean of maximum and minimum.	Highest.
Western Plateau													
Alfred Centre	Allegany	1824										30.6	55
Angelica	"	1340									29.3	29.7	55
Friendship	"	1550									29.0	31.3	55
Humphrey	Cattaraugus	1950							86	26	30.4	29.8	58
Arkwright	Chautauqua	1260										29.0	58
Elmira	Chemung	863								54.3		34.3	
LeRoy	Genesee	888										29.8	54
Mt. Morris	Livingston	625										31.4	65
Lockport	Niagara	616										32.0	64
Victor	Ontario	650										31.5	63
Wedgewood	Schuyler	1350								28.0		29.7	56
Addison	Steuben	1000							70	28	31.8	32.6	53
South Canisteo	Steuben	1480									29.9	30.2	55
Arcade	Wyoming	1557									27.0	27.7	49
Varysburg	"											30.1	61
Italy Hill	Yates	1650											
Eastern Plateau													
Binghamton	Broome	870									30.7	28.9	60
Oxford	Chenango	1250										29.4	50
Cortland	Cortland	1120										29.6	48
												29.4	47
South Kortright	Delaware	1700										28.5	60
Brookfield	Madison	1350							73	21	28.4	27.6	48
Middletown	Orange	660							73	24	31.7	32.8	48
Port Jervis	"	470											
Cooperstown	Otsego	1300									29.2	27.5	52
New Lisbon	"	1234									27.5	28.1	50
Quaker Street	Schenectady	973										26.3	45
Ferry City	Schuyler	1038									28.9	28.8	52
Waverly	Tioga	825									30.2	32.4	55
Newfield Summit	Tompkins	3000										28.1	47
Minnewaska	Ulster	1800										27.9	
Northern Plateau													
Lyon Mountain	Clinton	1917										25.3	57
Keene Valley	Essex	1015										24.4	54
Amersand	Franklin	1600	30.01	30.59	29	29.53	24	1.06			34.0	25.8	57
Hiawatha House	Franklin												
Gloversville	Fulton	802									26.9	27.0	46
Blue Mountain Lake	Hamilton												
Bisby Lodge	Herkimer	1950											
Carthage	Jefferson										25.9	25.9	
Constableville	Lewis	1246									25.0	25.2	47
Lowville	Lewis	900										26.0	50
Number Four	"	1571	30.06	30.56	29	29.63	4	0.93			22.6	23.8	49
Turin	"	1240										24.0	45
Coast Region													
New York City	New York	164	30.07	30.60	29	29.42	4	1.18	70	27		34.8	55
Wilets Point	Queens											36.0	53
Brentwood	Suffolk	75									33.0	34.2	55
Setauket	"	40							78	28	34.0	34.2	51
Hudson Valley													
Albany	Albany	85	30.06	30.62	29	29.50	4	1.12	78	24		31.6	53
												31.4	53

## STATE METEOROLOGICAL BUREAU.

73

FOR MARCH, 1893.

PERATURE — (IN DEGREES FAHR.)								SKY.			PRECIPITATION — (INCHES.)				WIND.			
Date.	Low.	High.	Date.	Monthly range.	Mean daily range.	Greatest daily range.	Date.	Least daily range.	Date.	Number of clear days.	No. of partly cloudy days.	Number of cloudy days.	Number of days on which 0.01 or more inches fell.	Total.	Greatest daily.	Average daily.	Total snow fall.	Prevailing direction.
24	3	4	52	17	44	29	3	22	6.3	11.0	13.7	14.0	2.76	1.40	.089	.....	.....	.....
24	6	5	52	16	37	8	4	26	4	15	12	16	2.87	0.85	.093	7.5	W.	.....
24	5	5	57	20	44	29	9	30	5	10	16	13	2.33	0.72	.075	5.3	S. W.	.....
24	5	16	53	16	35	29	3	22	4	8	19	16	2.63	0.50	.085	11.2	S. W.	.....
24	6	4	52	13	23	aa	4	26	.....	12	4	15	.....	.....	.066	.....	N. W.	.....
24	8	i	56	16	32	19	4	9	7	10	14	18	2.05	0.75	.126	17.0	S. W.	.....
24	9	i	56	20	37	29	9	15	3	13	15	.....	3.90	1.00	.126	.....	W.	.....
24	11	j	53	14	28	23	5	3	5	18	8	11	2.62	0.94	.085	8.0	S. W.	.....
24	8	er	55	16	33	29	7	bd	6	12	13	12	2.80	1.04	.090	13.0	W.	.....
8	4	5	52	18	37	29	7	11	5	16	10	11	2.93	1.12	.095	11.8	S. W.	.....
a	10	5	43	16	31	ab	5	22	9	12	10	11	2.42	1.20	.084	6.2	S. W.	.....
24	5	5	50	18	34	29	7	13	13	1	17	18	3.51	1.40	.113	12.5	N. W.	.....
31	3	4	46	16	32	29	7	12	3	13	15	18	2.64	0.92	.085	10.4	.....	.....
24	7	k	54	17	33	8	6	be	.....	.....	.....	.....	2.21	.....	.071	.....	.....	.....
25	—2	19	45	16	40	8	1	23	8.1	10.4	12.5	10.2	2.63	1.75	.085	.....	.....	.....
21	0	5	50	19	37	8	6	23	5	13	13	10	2.80	1.04	.090	7.0	N. W.	.....
b	5	m	43	18	37	7	7	9	10	12	9	15	2.58	0.66	.083	8.4	N. W.	.....
24	8	19	39	12	28	8	5	11	.....	.....	.....	12	2.22	0.70	.072	.....	.....	.....
25	4	n	56	19	38	25	5	23	.....	.....	.....	8	2.82	0.58	.091	.....	.....	.....
24	—2	19	50	16	40	8	3	9	7	11	13	10	2.08	0.40	.067	11.5	N. W.	.....
12	13	5	35	13	22	15	4	11	12	5	14	11	3.86	1.48	.125	4.2	W.	.....
24	5	19	47	14	35	8	7	bf	11	6	14	11	2.13	0.59	.069	8.0	N.	.....
24	3	19	47	17	36	8	7	cc	5	13	13	11	2.12	0.70	.068	9.2	W.	.....
12	5	5	40	17	26	ac	6	11	13	12	6	5	1.80	0.60	.058	3.0	E.	.....
24	7	p	45	16	35	8	5	9	2	11	18	12	2.43	0.99	.078	8.8	S. W.	.....
21	8	q	47	17	39	8	1	23	.....	.....	.....	13	2.89	1.35	.093	7.2	N. W.	.....
23	5	r	42	13	29	15	3	1	.....	.....	.....	5	3.80	1.75	.123	.....	.....	.....
c	—7	19	52	18	46	8	4	g	9.0	9.7	12.3	7.9	1.97	1.27	.065	.....	.....	.....
24	1	s	53	16	36	15	4	31	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
c	—3	p	60	23	46	8	6	21	11	9	11	5	0.70	0.20	.023	5.0	.....	.....
d	3	19	43	17	34	8	5	11	8	8	15	8	1.84	0.65	.059	4.0	W.	.....
24	—4	19	51	18	36	15	4	12	5	14	12	4	1.87	0.70	.060	2.1	N.	.....
8	—2	6	52	17	42	8	5	12	11	8	12	8	1.86	0.79	.060	1.0	W.	.....
9	—7	19	56	18	35	19	6	21	5	8	18	11	2.27	0.63	.073	11.2	N. W.	.....
25	—2	19	47	16	30	15	6	11	10	10	11	13	3.40	0.99	.117	15.8	S. W.	.....
25	9	5	40	14	29	30	2	cd	10.3	11.0	9.7	11.0	4.38	2.78	.141	.....	.....	.....
31	14	5	39	13	27	30	4	3	7	14	10	15	4.47	1.81	.144	.....	N. W.	.....
e	14	5	40	14	23	30	2	11	.....	.....	.....	9	4.48	2.20	.144	0.5	N. W.	.....
25	9	5	46	17	29	30	5	23	14	8	9	7	4.75	2.00	.153	8.0	N. W.	.....
25	15	5	36	12	23	30	2	4	10	11	10	13	5.82	2.78	.123	8.5	W.	.....
f	3	19	44	16	41	8	3	11	11.1	9.5	10.4	10.7	3.59	2.20	.116	.....	.....	.....
12	9	16	43	14	27	8	5	25	7	10	14	13	2.00	0.55	.065	.....	N. W.	.....

## METEOROLOGICAL DATA

LOCATION OF STATIONS.			BAROMETER.						HUMIDITY.		TEMP.		
STATIONS.	County.	Elevation, feet.	Mean.	Highest.	Date.	Lowest.	Date.	Monthly range.	Mean relative.	Dew point (degrees).	Mean of tri-daily observations.	Mean of maximum and minimum.	Highest.
<i>Hudson Val — (Con.).</i>													
Lebanon Springs	Columbia	880									29.2	53	
Honeymead Brook	Dutchess	450									30.5	31.1	50
Poughkeepsie	Dutchess	180										31.8	53
Wappinger's Falls	Dutchess											31.9	53
West Point	Orange	107										33.2	51
Boyd's Corners	Putnam	516											
Carmel		500											
Rondout	Ulster	150									33.0	53	
<i>Mohawk Valley</i>													
Rome	Oneida	445										33.2	44
Utica		537										33.2	44
<i>Champlain Valley</i>													
Plattsburgh	Clinton	150										35.8	48
Plattsburgh Barracks		125										33.2	46
Port Henry	Essex												
Saratoga	Saratoga	270											
Glens Falls	Warren	340										33.4	48
Whitehall													
<i>St. Lawrence Valley</i>													
Malone	Franklin	810									25.0	27.5	61
Madison Barracks	Jefferson	264										27.8	55
Watertown		486	30.02	30.58	29	29.58	4	1.00				28.8	57
Canton	St. Lawrence	304									27.2	27.8	61
North Hammond	"	300									27.9	29.0	56
Ogdensburg	"	258									27.4	28.1	55
Potsdam	"	300									26.2	26.2	58
<i>Great Lakes</i>													
Dunkirk	Chautauqua	590										31.0	70
Buffalo	Erie	690	30.05	30.57	29	29.58	24	0.99	76	24		30.9	62
Eden Centre		690										30.5	59
Brockport	Monroe	523										32.0	65
Rochester		621	30.06	30.62	29	29.60	24	1.02	80	26		31.2	66
Fort Niagara	Niagara	263										31.2	63
Hess Road Station	Niagara	330										34.4	67
Baldwinsville	Onondaga	390									30.2	29.8	57
Albion	Orleans	521									30.7	30.0	70
Oswego	Oswego	304	30.05	30.60	29	29.54	24	1.06	71	21		28.9	53
Palermo		460									28.6	28.3	49
Lyons	Wayne	407									31.8	31.5	54
Erie, Pa.	Erie	681	30.05	30.54	29	29.58	9	0.96	79	26		33.0	70
<i>Central Lakes</i>													
Fleming	Cayuga	1000										31.2	58
Geneva	Ontario	459									30.2	30.1	52
Watkins	Schuyler	737									31.0	31.7	53
Romulus	Seneca	719							82	24		32.5	58
Hammondsport	Steuben	800										30.8	54
Ithaca	Tompkins	840	30.04	30.59	29	29.58	4	1.01			30.1	30.8	53
Mean			30.05	30.62	29	29.42	4	1.03	76	24		29.5	70

\* Mean of the tri-daily observations. † Mean of the maximum and minimum by the Draper ther daily observations are derived by the formula  
 (a) 8, 31; (b) 21, 24; (c) 11, 24; (d) 10, 12; (e) 25, 31; (f) 12, 25; (g) 12, 31; (h) 23, 24; (i) 4, 5, 16;  
 (j) 18, 19; (k) 4, 16; (l) 15, 17; (m) 5, 16; (n) 5, 16, 19; (oa) 24, 31; (ab) 8, 23; (ac) 8, 15, 29;  
 26; (ce) 9, 23; (cd) 4, 11; (ce) 11, 28; (cf) 22, 26; (dd) 2, 26; (de) 11, 26; (df) 11, 12; (ee)

FOR MARCH, 1893 — (Concluded).

TEMPERATURE — (IN DEGREES FAHR.).								SKY.		PRECIPITATION — INCHES.					WIND.		
Date.	Lowest.	Date.	Monthly range.	Mean daily range.	Greatest daily range.	Date.	Least daily range.	Date.	Number of clear days.	No. of partly cloudy days.	Number of cloudy days.	Number of days on which .001 or more inches fell.	Total.	Greatest daily.	Average daily.	Total snow fall.	Prevailing direction.
25	3	19	50	18	25	8	9	ce	10	10	11	9	.....	.....	.....	1.5	W.
14	9	5	41	16	23	8	6	ce	9	6	11	11	3.08	0.78	.099	8.7	N. W.
12	4	5	49	20	41	8	6	11	11	10	10	11	3.12	0.68	.101	8.3	N.
12	6	5	46	18	24	8	5	9	11	13	7	14	4.78	2.30	.154	8.0	S. W.
8	8	1	43	16	26	8	7	c	.....	.....	.....	8	3.94	1.40	.127	7.2	S.
25	17	16	35	18	26	8	3	11	22	3	6	8	4.60	1.80	.148	7.0	.....
21	5	19	39	15	32	8	2	31	3	15	13	15	3.16	1.18	.102	.....	.....
21	5	19	39	15	32	8	2	31	3	15	13	15	3.16	1.18	.102	15.8	W.
11	—3	3	48	20	36	6	1	13	.....	.....	.....	7.5	1.29	0.66	.042	.....	.....
24	2	6	44	18	31	6	1	13	.....	.....	.....	6	0.68	0.25	.022	.....	S.
11	—3	3	51	21	36	6	7	12	.....	.....	.....	9	1.90	0.66	.061	7.0	N.
24	0	t	55	19	46	2	1	15	7	2	12	6	1.09	0.60	.035	.....	.....
24	0	u	61	17	35	15	6	1	9	9	13	7	0.85	0.54	.027	1.2	W.
24	6	h	49	18	30	h	1	15	.....	.....	.....	7	1.22	0.45	.039	3.0	S. W.
24	5	k	52	17	26	ad	6	9	1	24	6	10	1.81	0.50	.058	.....	N.
24	1	6	60	18	33	15	6	12	7	12	12	6	0.92	0.60	.080	1.0	.....
24	7	6	49	18	26	ae	8	31	5	12	14	4	0.98	0.45	.032	0.5	S.
24	2	q	53	23	42	14	12	13	.....	.....	.....	.....	.....	.....	.....	.....	S. W.
24	0	5	58	21	46	24	5	31	14	6	11	5	0.75	0.30	.024	4.5	S. W.
h	—4	5	52	14	42	23	2	26	7.7	9.6	13.7	13.2	2.19	1.28	.071	.....	.....
24	11	v	51	13	26	aa	5	cf	.....	.....	.....	17	1.84	0.45	.059	.....	.....
24	9	5	50	14	35	23	3	12	4	16	11	18	2.62	0.89	.085	.....	S. W.
24	—4	5	69	18	32	15	5	12	11	0	20	14	6.16	1.15	.199	10.5	S. W.
24	11	a	55	14	29	af	6	26	1	14	16	18	2.16	0.83	.070	.....	W.
24	10	16	53	12	23	bb	4	18	9	5	17	24	1.81	0.70	.058	.....	S. W.
24	16	15	51	12	30	23	2	26	.....	.....	.....	6	2.21	1.28	.071	T.	W.
24	9	15	48	16	29	23	7	16	11	6	14	12	2.56	0.46	.063	4.5	.....
24	1	w	59	14	32	24	4	15	14	12	5	6	1.80	0.60	.042	11.0	S. W.
24	8	16	45	11	27	8	4	26	8	9	14	8	1.23	0.20	.040	.....	W.
24	2	19	47	14	29	8	4	21	6	13	12	10	1.32	0.30	.043	5.2	N. W.
24	13	x	41	12	22	8	6	dd	6	9	16	7	1.22	0.30	.039	9.0	W.
23	11	4	59	16	42	23	5	23	7	12	12	18	1.89	0.29	.061	.....	W.
24	9	p	44	16	25	20	5	de	8.0	13.7	9.3	6.8	1.63	1.06	.059	.....	.....
24	9	p	43	15	23	29	7	df	.....	.....	.....	4	1.25	0.54	.040	9.0	S.
24	10	y	43	16	30	8	7	11	.....	.....	.....	5	1.56	0.76	.050	4.0	.....
24	10	5	48	17	35	20	5	26	7	22	2	6	1.97	1.00	.064	.....	.....
24	10	5	44	16	29	29	6	11	9	11	11	7	1.90	0.99	.061	5.9	S.
24	10	y	43	16	33	8	5	11	8	8	15	12	2.49	1.06	.080	6.8	S. E.
h	—7	19	47	16	46	bc	1	ee	7.9	11.4	11.7	10.3	2.47	2.76	.080	.....	S. W.

mograph. | Report received too late to be used in computing means. The means from the tri-  
 (7 A. M. + 2 P. M. + 9 P. M. + 9 P. M.) + 4.  
 (f) 4, 5, 18, 19; (k) 4, 5; (m) 3, 19; (n) 3, 16; (p) 5, 19; (q) 5, 6; (r) 5, 15; (s) 15, 16; (t) 5, 18, 19;  
 (ad) 6, 17; (ae) 10, 19, 24; (af) 24, 29; (bb) 23, 29; (bc) 8, 24; (bd) 2, 9; (be) 18, 26; (bf) 10, 12,  
 13, 15, 23; (cf) 4, 19.



## DAILY AND MONTHLY MEAN

STATIONS.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<i>Western Plateau.</i>	26	25	27	17	16	25	35	39	37	36	38	37	35	37
Alfred Centre.....	24	21	23	15	12	24	34	36	34	34	34	32	32	35
Angelica.....	27	25	27	18	15	24	34	34	36	39	38	36	36	38
Friendship.....	26	26	26	19	14	24	34	38	40	40	40	39	40	39
Humphrey.....	26	26	24	14	13	23	36	43	38	39	36	34	33	36
Arkwright†.....	26	24	25	12	14	24	34	41	38	39	39	34	35	35
Sherman.....	33	29	38	18	19	30	40	44	39	42	41	42	37	40
LeRoy.....	26	22	26	19	17	21	32	38	34	34	38	35	33	37
Mount Morris.....	29	27	28	18	18	26	34	39	36	39	42	42	36	40
Lockport.....	28	28	30	20	19	26	38	44	39	38	37	38	38	36
Victor.....	23	26	24	16	12	24	32	40	36	40	39	40	34	34
Wedgewood.....	28	23	28	17	14	26	33	40	36	38	34	38	35	36
Addison.....	26	29	31	23	19	28	35	38	40	40	39	40	36	38
South Canisteo.....	26	25	27	19	16	26	34	36	38	36	35	39	36	38
Arcade.....	26	20	26	14	13	20	33	35	36	36	37	34	34	34
Varysburgh.....	28	23	30	17	16	24	36	38	39	38	39	38	34	37
Italy Hill.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
<i>Eastern Plateau.</i>	25	23	23	22	15	22	29	32	37	37	37	40	36	36
Binghamton.....	22	22	22	24	11	18	25	34	36	40	38	40	34	38
Oxford.....	26	24	19	24	20	24	26	30	38	38	38	41	37	40
Cortland†.....	21	22	24	21	18	24	29	30	37	38	36	38	35	37
South Kortright.....	24	20	18	24	16	22	28	24	41	36	38	42	34	36
Brookfield.....	26	21	20	18	14	22	24	25	40	38	40	39	34	34
Middletown.....	34	32	26	16	18	24	34	36	38	38	34	42	41	38
Port Jervis.....	27	26	25	26	19	22	28	30	38	38	34	42	41	38
Cooperstown.....	26	21	21	20	15	21	26	30	38	36	40	40	34	36
New Lisbon.....	26	18	18	22	16	22	24	29	38	38	40	40	32	36
Quaker Street.....	24	18	18	20	12	20	26	29	35	35	33	40	38	32
Perry City.....	25	22	26	23	15	20	28	32	30	37	36	38	34	38
Waverly.....	26	29	28	20	18	21	38	34	38	40	36	42	40	42
Newfield Summit.....	28	21	27	21	12	26	36	38	34	34	32	32	36	23
Minnewaska*.....	24	21	25	19	12	20	31	36	37	32	38	39	41	39
<i>Northern Plateau.</i>	26	18	17	18	11	14	24	29	36	34	38	37	30	33
Lyon Mountain†.....	24	14	20	14	8	12	25	35	34	32	40	37	28	34
Amersand.....	16	15	14	20	8	14	24	29	38	34	44	38	36	36
Gloversville.....	26	20	17	24	14	18	22	25	36	39	36	40	34	32
Carthage*.....	26	22	21	14	15	21	26	31	35	34	39	37	24	36
Constableville.....	26	19	16	18	12	14	23	26	38	32	36	36	30	30
Lowville.....	27	18	17	20	12	12	24	29	38	34	37	36	29	30
Number Four.....	24	15	14	16	8	10	25	26	40	32	40	37	28	34
Turin.....	25	18	18	17	12	14	26	28	38	38	35	37	29	30
<i>Coast Region.</i>	34	31	31	28	21	25	32	34	39	36	37	44	43	41
New York city.....	35	33	31	30	20	26	33	40	40	36	40	44	46	45
Willet's Point.....	34	31	30	28	22	25	32	34	36	37	34	42	44	40
Brentwood.....	34	30	31	27	19	22	30	30	42	37	38	46	41	38
Setauket.....	32	30	31	28	22	26	32	34	37	35	37	44	40	40
<i>Hudson Valley.</i>	29	27	24	28	20	25	29	29	37	39	36	44	40	37
Albany.....	32	24	18	28	19	25	31	30	38	41	37	44	41	37
Lebanon Springs.....	28	23	24	26	12	22	26	26	40	38	34	41	40	36
Honeymead Brook.....	30	26	22	25	18	24	30	28	39	40	38	44	38	37
Poughkeepsie.....	28	28	22	28	17	21	28	29	36	39	36	45	39	36
Wappingers Falls.....	27	30	25	28	18	26	28	28	36	38	36	45	38	38
West Point.....	30	31	28	29	24	25	30	34	32	40	36	44	43	38
Boyd's Corners.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Carmel.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Rondout†.....	30	30	30	30	30	30	32	31	39	40	36	44	38	38
Peekskill.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
<i>Mohawk Valley.</i>	24	20	20	25	23	28	30	33	38	35	37	38	34	30
Rome.....	22	18	21	26	30	33	30	38	38	36	36	36	34	28
Utica.....	27	21	20	24	16	23	30	28	38	34	38	39	34	32

## TEMPERATURES FOR MARCH, 1893.

15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Monthly mean.
19	15	26	20	24	32	38	29	35	47	36	81	29	23	28	36	40	30.4
16	11	23	18	20	28	36	26	29	42	87	29	27	21	24	35	36	27.3
19	14	24	20	23	28	37	28	35	48	88	30	28	22	26	37	38	29.7
19	14	26	24	24	28	36	30	36	50	40	83	31	24	31	36	44	31.3
11	14	23	24	22	33	35	30	35	46	40	82	32	26	28	35	41	29.8
16	12	22	18	24	31	36	30	39	46	32	28	28	20	25	34	38	29.0
18	30	32	22	32	39	42	34	38	49	39	34	32	24	35	41	45	34.3
14	16	24	18	20	34	38	27	35	50	32	30	27	21	28	36	40	29.3
16	17	27	20	26	34	40	28	35	50	34	30	30	21	30	36	38	31.4
22	20	27	18	32	36	39	30	38	54	36	30	32	24	30	36	40	32.0
25	16	22	22	22	35	40	31	36	50	40	31	28	23	30	34	44	31.5
20	16	26	18	34	31	40	30	30	41	34	30	27	22	28	35	40	29.7
25	18	28	24	27	34	43	30	34	44	40	34	32	24	30	38	43	32.6
22	15	25	25	23	30	38	30	30	44	37	32	30	25	25	38	39	30.2
16	11	22	18	20	30	34	28	32	46	33	27	27	20	26	34	36	27.7
20	16	26	19	22	32	33	28	36	52	36	29	23	22	27	35	38	30.1
24	15	23	31	21	31	38	31	30	38	37	32	29	24	26	33	37	29.1
25	16	24	22	24	32	36	29	31	40	39	34	31	24	28	32	39	29.4
25	18	22	22	20	33	36	30	30	39	38	35	28	23	25	32	36	29.6
22	16	24	20	19	32	40	34	33	40	37	33	29	22	26	34	36	29.4
26	10	22	18	19	30	26	32	24	42	41	34	26	26	23	32	36	28.5
22	10	24	18	14	30	38	33	29	40	36	32	26	20	22	30	35	27.6
25	18	26	29	24	32	40	36	29	36	42	37	34	29	28	32	40	32.3
30	20	26	28	26	32	41	35	34	30	40	36	34	30	28	34	40	31.7
24	10	22	18	16	30	38	28	28	44	38	30	26	20	23	32	34	27.5
26	18	22	19	15	31	36	30	29	42	39	28	26	22	23	33	36	28.1
25	16	22	20	17	26	36	26	20	34	36	32	28	22	24	30	31	26.3
22	14	24	18	20	30	38	29	32	42	37	32	26	22	24	34	38	28.8
25	16	28	25	24	34	45	31	36	38	38	38	32	26	28	37	44	32.4
30	22	18	22	30	36	30	29	38	28	26	19	25	32	35	35	35	28.1
16	12	20	20	20	28	37	30	23	38	36	35	30	20	24	34	34	27.9
21	11	19	17	12	23	33	26	25	40	36	29	24	20	21	29	32	25.3
19	6	18	11	14	24	32	19	26	48	35	25	23	15	25	30	30	24.4
20	12	20	26	12	22	34	24	20	44	38	28	24	18	22	30	30	25.8
24	13	23	18	14	26	34	20	22	32	38	36	28	14	23	30	38	27.0
13	18	23	16	16	26	32	22	30	44	31	27	26	20	26	35	33	25.9
26	18	10	20	8	22	34	28	26	38	36	28	23	21	18	26	32	25.2
24	10	20	18	13	23	34	28	26	40	38	30	26	21	22	32	36	26.0
21	6	10	14	10	20	32	26	26	40	36	28	22	28	16	22	31	23.8
23	10	16	14	10	22	33	27	.....	32	36	28	24	17	17	.....	29	24.0
34	24	27	33	30	36	40	39	32	40	45	41	37	34	32	37	45	34.8
34	24	30	34	30	38	44	41	32	41	47	40	37	32	33	40	46	36.0
36	22	27	32	32	36	41	38	34	38	44	43	39	36	32	37	45	34.8
34	26	25	33	30	36	38	38	32	41	43	40	35	34	32	34	45	34.2
31	23	26	32	29	34	39	39	32	40	45	40	36	34	32	38	43	34.2
29	20	21	24	23	32	40	34	28	36	42	38	34	29	29	34	41	31.7
24	16	26	24	20	31	42	33	25	36	40	38	36	28	30	34	42	31.4
30	13	20	20	16	26	36	35	26	39	44	37	30	21	26	32	38	29.2
26	18	23	24	23	32	38	34	29	36	42	39	33	26	28	34	40	31.1
30	23	26	25	24	33	41	34	27	34	43	39	36	36	29	34	41	31.8
31	22	26	26	26	34	40	34	28	36	40	38	34	30	30	34	39	31.9
35	23	27	26	26	35	40	38	33	34	42	38	36	30	30	34	44	33.2
29	23	26	24	24	32	40	33	28	34	44	38	34	28	30	35	42	33.0
18	14	25	21	16	30	38	34	26	34	34	32	30	23	26	37	35	28.2
13	15	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
25	14	25	21	16	30	38	34	26	34	34	32	30	23	26	37	35	28.2

## DAILY AND MONTHLY MEAN

STATIONS.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<i>Champlain Valley.</i>	20	18	16	21	16	16	28	26	33	33	37	37	31	36
Plattsburgh Bar'ks.	20	18	18	16	13	15	26	27	30	32	33	33	30	36
Glens Falls.....	.....	.....	14	26	18	17	29	26	36	34	41	36	32	36
<i>St. Lawrence Vall'y</i>	26	17	23	18	14	18	26	34	36	31	41	38	30	34
Malone.....	23	13	20	21	8	14	24	32	38	34	44	38	26	33
Madison Barracks..	20	18	24	20	15	20	26	36	34	34	38	37	30	34
Watertown .....	30	19	26	15	16	22	31	34	39	38	42	40	30	36
Canton.....	28	18	27	19	14	16	30	34	36	30	43	38	28	33
North Hammond ..	28	17	18	20	20	20	29	33	38	31	38	41	42	38
Ogdensburg.....	22	16	27	17	11	20	29	36	34	31	46	32	26	31
Potsdam.....	29	17	22	16	13	15	28	32	35	28	36	38	30	30
<i>Great Lakes</i> .....	29	27	28	20	18	26	33	39	39	38	41	37	33	35
Dunkirk.....	28	28	28	17	18	26	34	42	39	38	44	35	35	37
Buffalo.....	28	26	29	16	16	24	32	43	39	40	42	34	34	34
Eden Centre.....	26	30	32	19	8	22	32	38	43	46	42	36	32	40
Brockport.....	28	26	28	20	19	30	34	40	42	34	40	38	30	36
Rochester.....	29	26	28	19	19	26	35	42	39	37	43	40	32	36
Fort Niagara.....	31	30	32	24	22	28	38	42	41	40	42	41	36	39
Hess Road Station.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Baldwinsville.....	28	24	25	20	21	28	28	30	32	32	39	36	32	30
Albion.....	30	28	26	21	18	27	30	44	36	37	42	36	35	36
Oswego.....	30	26	24	22	20	25	30	34	38	36	38	37	27	34
Palermo.....	29	24	23	19	18	24	28	30	37	34	38	37	30	29
Lyons.....	31	25	28	22	18	26	32	37	38	37	40	40	32	36
Erie, Pennsylvania.	32	32	33	20	20	28	38	46	42	42	40	38	41	39
<i>Central Lakes</i> .....	30	27	25	22	18	26	33	37	39	36	38	40	35	36
Fleming.....	28	24	25	22	16	24	32	36	38	36	38	38	33	36
Geneva.....	30	26	25	22	20	28	34	37	38	36	38	40	36	36
Watkins.....	32	33	33	24	17	26	32	42	44	38	38	42	34	38
Romulus.....	30	26	27	22	17	26	32	36	38	36	38	40	34	32
Ithaca.....	32	28	26	22	18	28	34	36	38	36	36	40	36	37
Monthly means.	26.9	28.3	28.4	21.9	17.3	22.5	30.1	33.2	37.1	35.7	38.0	39.2	34.7	35.5

\* Means of tri-daily observations. † Mean of the maximum and minimum by the Draper and minimum of the ordinary self-registering thermometers. The means from the tri-daily received too late to be used in computing averages.

## STATE METEOROLOGICAL BUREAU.

79

## TEMPERATURES FOR MARCH, 1893 — (Concluded).

15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Monthly mean
28	16	22	14	16	23	33	27	23	34	40	30	29	22	24	32	35	25.8
30	14	21	10	14	22	30	24	18	30	39	26	28	20	24	31	36	23.2
26	19	23	17	18	24	36	30	28	38	42	34	30	24	24	34	34	26.4
20	14	21	15	17	29	35	26	28	43	36	30	30	23	26	35	37	20.1
30	8	20	5	12	22	34	24	22	44	40	26	26	18	24	31	32	25.0
30	17	21	16	16	29	32	28	36	40	35	33	31	24	27	30	42	27.8
21	13	20	16	20	29	38	26	32	50	36	32	28	22	26	37	36	26.8
22	12	22	14	16	28	38	25	26	48	36	29	28	20	28	37	36	27.8
22	20	28	26	18	32	37	30	27	43	35	29	29	24	26	36	36	29.0
16	18	17	13	21	37	35	25	28	44	32	36	32	30	28	41	39	28.1
22	13	16	16	15	28	34	25	25	35	39	28	28	24	25	33	36	26.2
19	18	24	19	23	33	38	31	38	49	26	30	30	24	28	37	41	31.0
21	17	24	20	25	34	37	30	40	49	33	30	29	24	24	36	39	30.9
14	18	26	20	24	35	36	23	40	48	32	29	31	24	26	36	40	30.5
34	18	16	26	23	33	40	35	38	55	38	31	28	26	24	40	50	32.0
22	17	26	19	22	32	40	31	35	52	36	30	30	24	28	36	41	31.2
14	18	28	17	25	34	40	28	36	51	34	31	20	24	32	37	42	31.3
26	22	29	24	26	36	41	33	43	56	38	32	33	30	30	39	40	34.4
14	20	24	17	23	34	38	34	40	46	36	32	30	22	30	37	43	29.8
13	17	16	16	24	30	36	29	44	52	23	27	26	20	30	36	36	30.0
16	16	26	16	18	30	35	29	30	42	34	30	30	22	28	36	37	28.9
24	15	26	18	14	26	38	30	30	41	40	30	27	22	24	35	37	24.3
24	18	28	20	24	34	40	32	32	46	38	32	32	24	30	39	40	31.5
16	18	24	20	26	34	37	33	49	52	34	32	3	24	27	36	42	33.0
24	18	27	21	22	35	41	29	31	43	40	32	30	26	29	37	40	31.2
22	16	26	20	20	34	39	32	32	48	40	30	28	26	27	36	36	30.1
24	17	28	20	28	34	42	32	32	44	40	32	32	25	29	38	42	31.7
24	22	26	25	22	35	40	28	32	46	42	32	28	29	32	38	40	32.5
24	17	28	20	22	34	41	33	31	40	39	32	30	25	28	36	39	30.8
22	16	26	20	22	36	42	25	27	48	40	33	31	24	28	36	41	30.8
23.6	16.5	23.9	20.5	20.4	30.4	37.4	30.6	29.6	40.4	35.2	32.5	30.2	24.8	26.9	33.7	38.3	28.8

thermograph. Means for all stations not otherwise indicated are derived from the maximum observations are derived by the formula  $(7 \text{ A. M.} + 2 \text{ P. M.} + 9 \text{ P. M.} + 9 \text{ P. M.}) \div 4$ . [Reports

## DAILY AND MONTHLY PRECIPITA

STATIONS.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<i>Western Plateau</i> .....	T.	T.	0.01	0.10	0.04	0.00	0.02	0.03	0.89	0.01	0.10	0.13	0.02	0.16
Alfred Centre.....	T.	T.	T.	.05	.05		T.	.10	.85	.03	.29	.03	T.	.20
Angelica.....	T.		T.	.06	.03		T.	T.	.72	T.	.21	.17	T.	.12
Bollivar.....														
Friendship.....	.05		.01	.05	.05		.04	.38	.35			.23		.05
Little Valley.....	T.		T.	.09	.10		.09	T.	.33	.03	.05	.36	.01	.31
Cherry Creek.....				.20					.58	.01		.05	.13	.17
Elmira.....	T.		.02	.04	0.2		.03	0.1	.85		.06	.03	.02	.15
Akron.....			.10	.30	.20		.05		1.00	.05	.15		.05	.10
LeRoy I.....		.03	.10						1.15		.02	.12		.15
Avon.....														
Mt Morris.....				.10					.94		.14		T.	.27
Lockport.....														
Victor.....				.30	.10		T.	T.	1.12		T.	.15		.16
Wedgewood.....				T.			T.		1.20		.02	.13		.15
Addison.....		T.		.03	.01				.94			.22	.02	.15
Atlanta.....														
Pine City.....	T.	T.	T.	.10	T.		T.	T.	1.40		.52	T.	T.	.05
South Canistota.....			.03	.07	.06		.05	.02	.92		.02	.13		.20
Arcade.....														
Attica.....									1.01			.26		.21
Varysburg.....	T.	0.04	0.06	0.04	0.02	0.03	0.06	0.00	0.78	0.01	0.22	.029	0.02	.16
<i>Eastern Plateau</i> .....		T.		.05			.05		.90	.14				.22
Binghamton.....			.05						.50			.65		.25
Chenango Forks.....		.10	T.	.05					.66	.02	.02	.65	.07	.09
Oxford.....		.30	.04				.11		.70			.24	.14	.15
Cortland.....			.40		.10		.20			.02	.75			
Deposit.....							.32		.58		.57			.28
South Kortright.....		.40			.10	.20			.35		.05	.32	T.	.21
Brookfield.....														
Apulia.....			.10	.10			.12		1.48		.60			
Middletown.....														
Port Jervis.....														
Warwick.....		.18				.15	.01		.35		.53	.02		.16
Cooperstown.....	T.	.10	T.	T.	.02	.10	.02		.41		.70	.02		.18
New Lisbon.....									.60		.50			
Quaker street.....														
Perry City.....	T.		T.	.15	.01	T.			.99		.22			.15
Liberty.....				.06			.06		1.15		.40			.22
Newark Valley.....			.04	.09	T.				1.35		.08	.19		.20
Waverly.....			.01	.06			.01		.76		.02	.20	.01	.06
Ellis.....														
McLean.....														
Newfield Summit.....									1.75		1.00			.40
Minnewaska.....	0.10	T.	0.06	T.	0.01	T.	T.	0.00	0.13	0.00	9.22	0.41	T.	0.24
<i>Northern Plateau</i> .....	T.			T.								.44		.12
West Chazy.....														
Au Sable Forks.....														
Keene Valley.....	T.		.10		T.									T.
Amersand.....														
Hiawatha House.....	T.	T.	.11	.03	.02	T.	T.		.35		.65			.24
Gloversville.....														
Blue Mt. Lake.....														
Bisby Lodge.....														
Carthage.....	.02		T.						.20					.70
Constableville.....			.10						T.		1.27	T.		
Lowville.....	.10								.14			.79		.05
Number Four.....	.23		.14		*	†.12			.20		.63			.06
Turin.....	.51		.06						.11		.99	.01		.13
Galway.....														
King's Station.....			.05						.20		.80			.85

## TATION FOR MARCH, 1893—INCHES.

15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total.
0.04	.03	.....	T.	0.12	0.02	0.15	0.36	0.12	0.07	T.	0.04	0.00	0.00	0.00	0.22	T.	2.68
.05	T.	0.00	T.	.25	T.	.20	.38	.10	.08	.....	.05	.....	.....	.....	.16	.....	2.87
.05	T.	.....	T.	.01	.....	.13	.38	.28	.05	.....	T.	.....	.....	.....	.12	.....	2.33
.05	.....	.....	T.	.15	.....	.25	.50	.....	.22	.....	.10	.....	.....	.....	.15	.....	2.63
.15	.05	.....	T.	.08	.01	.51	.41	.25	.07	T.	.04	.....	.....	.....	.85	.....	3.29
T.	.08	.....	T.	.14	T.	.04	.75	.10	.09	.01	.02	.....	.....	.....	.32	.....	2.05
.10	.20	.....	T.	.30	.35	.10	.80	.30	.15	.....	T.	.....	.....	.....	.20	.....	3.90
.....	.08	.....	.....	.20	.....	.08	.80	.12	.15	T.	T.	.....	.....	.....	.12	.....	2.62
.10	.....	.....	.....	.20	.....	.22	.08	.07	T.	.....	.10	.....	.....	.....	.40	T.	2.62
.02	.....	.....	.....	.15	.....	.07	.50	.20	.....	.....	T.	.....	.....	.....	.16	.....	3.93
T.	.....	.....	T.	.08	.....	.05	.60	.34	.04	.....	.01	.....	.....	.....	.05	.....	2.32
.....	.....	.....	.....	.01	.....	.....	.02	T.	.01	.....	.09	.....	.....	.....	.14	.....	1.74
T.	.....	.....	T.	.10	.....	.15	.85	T.	.04	.....	.05	.....	.....	.....	.25	.....	3.51
.05	.04	.....	T.	.15	.....	.30	.19	.11	.05	.....	.09	.....	.....	.....	.26	.....	2.64
.....	.....	.....	.....	.....	.....	.....	.....	.....	.18	.....	.....	.....	.....	.....	.55	.....	2.21
0.04	0.01	0.00	T.	0.01	0.02	0.14	0.17	0.25	T.	T.	0.01	0.00	0.00	0.00	0.07	0.00	2.51
T.	.....	.....	.....	.19	.20	.40	.....	.....	.....	.....	T.	.....	.....	.....	.05	.....	2.80
.....	.10	.....	.....	.....	.05	.60	.10	.30	.02	.....	.....	.....	.....	.....	.06	.....	2.15
.09	.....	.....	.06	.....	.....	.21	.18	.30	.....	.....	.05	.....	.....	.....	.18	.....	2.55
.....	.....	.....	.....	.....	.....	.....	.17	.....	.....	.....	.....	.....	.....	.....	.....	.....	2.22
.....	.....	.....	.....	.....	.....	.18	.31	.60	.....	.....	.....	.....	.....	.....	.06	.....	2.07
.10	.....	.....	.....	.....	.....	.05	.30	.02	.....	.....	.....	.....	.....	.....	.....	.....	2.32
.....	.....	.....	.....	.....	.....	.....	.....	.30	.....	.....	.....	.....	.....	.....	.....	.....	2.08
.24	.....	.....	.....	.....	.02	.06	.....	1.05	.....	.02	.....	.....	.....	.....	.07	.....	3.86
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.04	.....	.....	.....	.....	.....	.21	.40	.....	.....	.....	.....	.....	.....	.....	.08	.....	2.13
T.	.....	.....	.....	.....	.....	.14	.12	.28	.....	.....	.....	.....	.....	.....	.05	.....	2.12
.....	.....	.....	.....	.....	.....	.20	.30	.30	.....	.....	.....	.....	.....	.....	.20	.....	1.80
.06	.....	.....	.01	.....	.....	.07	.40	.19	.....	.....	.06	.....	.....	.....	.12	.....	2.43
.02	.....	.....	.....	.....	.....	.05	.25	.43	.....	.....	.....	.....	.....	.....	.06	.....	2.70
T.	T.	.....	.....	T.	.....	.09	.50	.33	.....	.....	.02	.....	.....	.....	.05	.....	2.49
.11	.01	.....	.....	.....	.....	.06	.23	.16	.....	.....	.....	.....	.....	.....	.06	.....	1.77
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	*	+.65	.....	.....	.....	.....	.....	.....	3.80
0.07	T.	T.	T.	0.00	T.	0.34	T.	0.02	0.10	T.	0.00	0.00	0.00	0.00	.19	T.	1.92
.05	T.	.....	.08	.....	.....	.05	.03	.02	.10	.....	.....	.....	.....	.....	.....	.03	0.87
.20	.....	.....	.....	.....	.....	.10	.....	.30	T.	.....	.....	.....	.....	.....	.10	.....	0.70
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	T.	.....	.....	.....	.28	.....	.....	T.	.....	.....	.....	.....	.....	.16	.....	1.84
T.	.....	.....	.....	.....	.....	.50	.....	.....	.10	.....	.....	.....	.....	.....	.35	.....	1.87
T.	.....	.....	.....	.....	.....	.30	.....	.....	.....	.....	.....	.....	.....	.....	.20	.....	1.87
.06	.....	.....	.....	.....	.....	.45	.....	.....	.10	.....	.....	.....	.....	.....	.17	.....	1.86
.10	.....	.....	.....	.....	.....	.40	.....	.....	.24	.....	.....	.....	.....	.....	.18	.....	2.27
.22	.04	.....	.....	T.	.....	.32	.....	.08	.19	T.	.....	.....	.....	.....	.18	.....	3.40
.....	.....	.....	.....	.....	.....	.20	.....	.10	.....	.....	.....	.....	.....	.....	.45	.....	2.55

## DAILY AND MONTHLY PRECIP

STATIONS.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<i>Coast Region</i> .....	0.16	0.00	0.01	0.48	0.01	0.00	0.03	0.00	2.00	0.14	0.23	0.21	0.00	0.02
New York City.....	.82	.....	.04	.40	.01	.....	.06	.....	1.81	.09	.15	.24	.....	T.
Willet's Point.....	.....	.....	.....	.....	.05	.....	.....	.....	2.20	.35	.20	.....	.....	.....
Brentwood.....	.....	.....	.....	.80	.....	.....	.....	.....	2.00	.10	.50	.....	.....	.....
Setauket.....	.20	T.	.90	.....	.....	.....	.08	.....	2.78	.07	.15	.27	.....	.11
Bedford.....	.27	.....	T.	.28	.....	.....	.02	.....	1.22	.07	.17	.56	.....	.....
<i>Hudson Valley</i> .....	0.08	0.00	0.01	0.07	0.02	T.	T.	0.00	0.93	0.05	0.09	0.55	0.00	0.16
Albany.....	.02	.....	.04	.04	T.	T.	T.	.....	.55	.01	.04	.54	.....	.10
Bethlehem Centre.....	.....	.....	.....	.....	.....	.....	.....	.....	.80	.....	.67	.....	.....	.30
Lebanon Springst.....	.05	.....	.05	.10	T.	T.	.....	.....	?	.....	*	+57	.....	.....
Honeymead Brook.....	.15	.....	.02	.....	.....	.....	.02	.....	.78	.....	.....	.58	.....	.15
<i>Pawling</i> .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Poughkeepsie.....	.18	.....	.....	T.	.18	.....	.....	.....	.46	.10	T.	.64	.....	.15
Wappinger's Falls.....	.16	.....	.02	.12	.....	.....	T.	.....	2.20	.08	.04	.58	.....	.09
West Point.....	.12	.....	T.	.31	.....	.....	.....	.....	1.40	.20	.....	.80	.....	.....
Boyd's Corners.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
<i>Carmel</i> .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
S. East Reservoir.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Schojack Depot.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Rondout.....	.....	.....	.....	.10	.....	.....	.....	.....	*	+1.80	.....	.75	.....	.55
Easton.....	.....	.....	.....	.....	.....	.....	.....	.....	.30	.....	.....	.51	.....	.10
<i>Mohawk Valley</i> ....	0.20	0.08	0.05	0.00	0.12	0.03	0.05	0.00	0.44	0.00	0.06	1.18	T.	0.25
Rome.....	.....	.....	.....	.....	.12	.03	.05	.....	.44	.....	.06	1.18	T.	.25
Utica.....	.20	.03	.05	.....	.12	.03	.05	.....	.44	.....	.06	1.18	T.	.25
<i>Champlain Valley</i> .....	0.00	0.00	0.04	0.04	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.46	T.	0.17
Plattsburgh.....	.....	.....	.....	.07	.....	.....	.....	.....	.....	.....	.....	.26	T.	.16
Plattsburgh Barracks.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Port Henry.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Glens Falls.....	.....	.....	.06	T.	.....	.....	.....	.....	.02	.....	.....	.66	.....	.16
Whitehall.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
<i>St. Lawrence Valley</i> .....	0.00	0.00	0.04	0.01	0.06	0.00	0.00	0.00	0.01	0.00	0.00	0.38	0.00	0.14
Malone.....	.....	.....	T.	.....	.....	.....	.....	.....	.....	.....	.....	.64	.....	.07
Madison Barracks.....	.....	.....	.08	.....	.....	.....	.....	.....	.....	.....	.....	.38	.....	.....
Watertown.....	.....	.....	T.	.08	.01	.....	.....	.....	.10	.....	.....	.40	.....	.21
Canton.....	.....	.....	.....	.01	.....	.....	.....	.....	.....	.....	.....	.60	.....	.04
<i>DeKalb Junction</i> ...	.....	.....	.12	.....	.21	.....	.....	.....	.....	.....	.....	.31	.....	.09
North Hammond.....	.....	.....	T.	.....	.1	.....	.....	.....	.....	.....	.....	.....	.....	.45
Ogdensburg.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Potsdam.....	.....	.....	.16	.....	.20	.....	.....	.....	.....	.....	.....	.18	.....	.10
<i>Great Lakes</i> .....	0.01	T.	0.02	0.11	0.04	0.03	0.05	0.02	0.46	T.	0.14	0.16	0.01	0.16
Dunkirk.....	.....	.....	.04	.03	.01	.....	.07	.04	.29	.....	.08	.18	.01	.13
Buffalo.....	T.	.....	.02	.04	T.	.....	.67	.....	.89	T.	.06	.07	.01	.13
Eden Centre.....	.....	.....	.20	.....	.....	.....	.....	.....	1.10	.....	1.15	.85	.10	.23
<i>Adams Centre</i> .....	.....	.....	.....	T.	T.	.....	.....	.....	.15	.....	.25	.50	.....	.....
Brockport.....	.01	.....	.01	.22	.....	.01	.04	.....	.83	.....	.08	.14	.08	.09
Rochester.....	T.	T.	.08	.10	.05	.01	.12	.....	.70	.....	.03	.09	T.	.14
Fort Niagara.....	.....	.....	.....	.....	.....	.....	.....	.....	1.28	.....	.10	.....	.....	.12
Hess road station.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
<i>Baldwinsville</i> .....	T.	.....	.....	.05	.20	.27	.46	.25	.04	.....	.16	T.	.....	.19
Albion.....	.....	.....	T.	.60	T.	.....	.....	.....	.20	.....	T.	.....	.....	.20
Lydonville.....	.....	.....	.07	.....	.....	.....	.02	.....	.58	.....	.....	.19	.....	.15
Demeter.....	.....	.....	.....	.08	.....	.....	.....	.....	.15	.....	.....	.28	.....	.20
Oswego.....	T.	T.	T.	.08	T.	T.	.....	.....	.17	.....	T.	.29	.....	.30
<i>Palermo</i> .....	.15	.....	.03	.02	.13	.15	.....	.....	.15	.....	.04	.....	.....	.20
Phoenix.....	.....	.....	.....	.23	.....	.....	.10	.....	.53	.....	.....	.....	.....	.15
Lyons.....	.....	T.	T.	.30	.20	.....	.....	.....	.06	.....	.....	T.	.....	.08
Erie, Pennsylvania.....	T.	.....	.01	.04	.05	.....	T.	.02	.26	.02	.20	.14	.....	.15
<i>Central Lakes</i> .....	0.00	T.	T.	0.06	T.	T.	0.09	0.00	0.76	0.00	0.05	0.04	0.01	0.15
Fleming.....	.....	.....	.....	.....	.....	.....	.40	.....	.....	.....	.....	.....	.....	.20
Geneva.....	.....	.....	.....	.10	.....	.....	.....	.....	.76	.....	.10	.....	.....	.....

## TATION FOR MARCH, 1893 — (Continued).

15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total.
0.82	T.	0.00	0.00	0.00	T.	0.03	0.03	0.49	0.04	0.00	0.00	0.00	0.00	0.00	T.	0.00	4.35
.76	.....	.....	.....	.....	.08	.07	.04	.39	.07	.....	.....	.....	.....	.....	T.	.....	4.47
1.20	.....	.....	.....	.....	.....	.08	.....	.40	.....	.....	.....	.....	.....	.....	.....	.....	4.48
.75	.....	.....	.....	.....	.....	.10	.....	.50	.....	.....	.....	.....	.....	.....	.....	.....	4.75
.62	.....	.....	.....	.....	.....	.04	.09	.47	.04	.....	.....	.....	.....	.....	T.	.....	3.82
.77	T.	.....	.....	.....	.....	.12	.....	.67	.09	.....	.....	.....	.....	.....	.01	.....	4.25
0.42	T.	0.00	0.00	0.00	T.	0.13	0.08	0.32	0.04	T.	T.	0.00	0.00	0.00	0.11	T.	3.35
.36	.....	.....	.....	.....	.....	.05	.01	.19	.....	T.	T.	.....	.....	.....	.05	T.	2.00
.72	.....	.....	.....	.....	.....	.06	.....	.18	.....	.....	T.	.....	.....	.....	.02	.....	.....
.42	.....	.....	.....	.....	.....	*	†.25	.....	T.	.....	.....	.....	.....	.....	.03	.....	.....
.....	.....	.....	.....	.....	.....	.14	.45	.06	.21	T.	.....	.....	.....	.....	.10	.....	3.08
.....	.....	.....	.....	.....	.....	.13	.11	.68	.05	.....	.....	.....	.....	.....	.07	.....	3.12
.43	.....	.....	.....	.....	T.	.14	.10	.70	.03	T.	.....	.....	.....	.....	.04	.....	4.78
.56	T.	.....	.....	.....	.....	.....	T.	.60	.05	.....	.....	.....	.....	.....	.....	.....	3.94
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.30	.....	.60	.....	.....	.....	.....	.....	.....	.50	.....	4.60
.62	.....	.....	.....	.....	.....	.24	.....	.....	.....	.....	.....	.....	.....	.....	.14	.....	1.91
0.08	0.00	0.02	0.00	0.00	0.00	0.34	0.60	0.08	0.10	0.00	0.00	0.00	0.00	0.00	0.06	0.00	3.16
.08	.....	.02	.....	.....	.....	.34	.....	.08	.10	.....	.....	.....	.....	.....	.05	.....	3.16
0.11	0.00	0.00	0.00	0.00	0.00	0.18	T.	T.	0.10	0.00	0.00	0.00	0.00	0.06	0.18	0.00	1.29
.09	.....	.....	.....	.....	.....	T.	.01	.....	.16	.....	.....	.....	.....	.....	T.	.....	0.68
.19	.....	.....	.....	.....	.....	.35	.....	.01	.05	.....	.....	.....	.....	.....	.36	.....	1.90
0.03	T.	0.01	0.01	0.00	0.00	0.25	T.	T.	0.06	0.01	0.00	0.00	0.00	0.00	0.15	0.00	1.12
.05	.03	.....	.04	.....	.....	.03	T.	T.	.09	.....	.....	.....	.....	.....	.....	.....	0.85
.11	.....	.05	.....	.....	.....	.45	T.	.....	.10	.....	.....	.....	.....	.....	.11	.....	1.22
.01	T.	.....	.....	.....	.....	.50	.....	.....	.02	.10	.....	.....	.....	.....	.43	.....	1.81
.01	.....	T.	.....	.....	.....	.18	.....	.....	.....	.....	.....	.....	.....	.....	.08	.....	0.92
.01	.....	T.	.....	.....	.....	.30	.....	.....	.05	.....	.....	.....	.....	.....	.20	.....	1.29
.....	.....	T.	.....	.....	.....	.30	.....	.....	.17	.....	.....	.....	.....	.....	.06	.....	0.98
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.16	.....	0.75
0.04	0.02	T.	T.	0.06	0.03	0.17	0.08	0.05	0.06	T.	0.02	0.00	0.00	0.00	0.30	T.	2.06
.08	.....	.....	T.	.10	.....	.19	.09	.05	T.	.....	.05	.....	.....	.....	.45	.....	1.84
.06	.01	.....	T.	.15	T.	.19	.14	.11	.01	.01	.06	.....	.....	.....	.54	.....	2.62
.05	.....	.....	.....	.20	.....	1.00	.30	.15	.43	.....	.....	.....	.....	.....	.60	.....	6.16
.....	.....	.....	.....	.....	.....	.30	.20	.....	.07	.....	.....	.....	.....	.....	.....	.....	1.47
.06	.01	.....	T.	.12	.....	.02	.01	.10	T.	T.	.06	.....	.....	.....	.32	.....	2.16
.05	.03	.....	.08	.02	.01	.07	.02	.07	.10	.01	.03	.....	.....	.....	.05	.....	1.81
.....	.....	.....	.....	.04	.14	.....	.....	.....	.....	.....	T.	.....	.....	.....	.53	.....	2.21
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.20	.....	.....	T.	T.	.21	.03	.09	.....	.....	.....	.....	.....	.....	.....	.41	T.	2.56
.....	.....	.....	T.	.20	.....	.....	.....	.05	.....	.....	.....	.....	.....	.....	.05	.....	1.30
.....	.....	.02	.....	.07	.....	.12	.....	.....	.05	.....	.05	.....	.....	.....	.62	.....	1.87
T.	T.	T.	.....	.....	.....	.15	.....	.14	.....	.....	.....	.....	.....	.....	.37	.....	1.22
.....	.....	.....	.....	.....	.....	.10	.....	.01	.11	T.	T.	.....	.....	.....	.22	T.	1.23
.....	.....	.....	.....	.....	.....	.10	.....	.....	.....	.....	.....	.....	.....	.....	.25	.....	1.32
.10	.....	.....	.....	.....	.....	.08	.....	.08	.....	.....	.....	.....	.....	.....	.33	.....	1.80
.04	T.	.....	T.	.05	.01	.18	.....	.10	.....	.....	T.	.....	.....	.....	T.	.....	1.22
.....	.....	.....	.....	.....	.....	.25	.29	.10	.05	.....	.03	.....	.....	.....	.18	.....	1.89
T.	0.00	0.00	T.	0.04	0.01	0.04	0.40	0.11	T.	T.	0.01	0.00	0.00	0.00	0.07	0.00	1.83
T.	.....	.....	.....	.....	.....	.50	.....	.....	.....	.....	.....	.....	.....	.....	.15	.....	1.26
.....	.....	.....	.....	.18	.....	.42	.....	.....	.....	T.	.....	.....	.....	.....	.....	.....	1.55



## DAILY AND MONTHLY PRECIPITA

STATION.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<i>C'n'l Lakes (Con.).</i>														
Watkins .....									1.00		.13			T.
Romulus .....				.06	T.		.04		.99					.28
Hammondsport .....														
Ithaca .....	T.	T.	.13	T.	T.	.01			1.06		T.	.21	.03	.25
Penn Yan .....														
Average .....	0.06	0.01	0.03	0.09	0.03	0.01	0.03	T.	0.64	0.02	0.11	0.38	0.01	0.16

\* Amount included in next measurement.

† Not used in computing the averages.  
averages. § Formerly

TION FOR MARCH, 1893 — (*Concluded*).

15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total.
.....	.....	.....	T.	.....	T.	.12	.50	.08	T.	T.	.....	.....	.....	.....	.14	.....	1.97
T.	.....	.....	.....	.....	.07	.....	.28	.18	.....	T.	.....	.....	.....	.....	T.	.....	1.90
.02	.....	.....	T.	.....	.....	.07	.30	.30	.....	.....	.05	.....	.....	.....	.06	.....	2.49
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
0.16	0.01	T.	T.	0.02	0.01	0.18	0.11	0.14	0.05	T.	0.01	0.00	0.00	0.00	0.14	T.	3.43

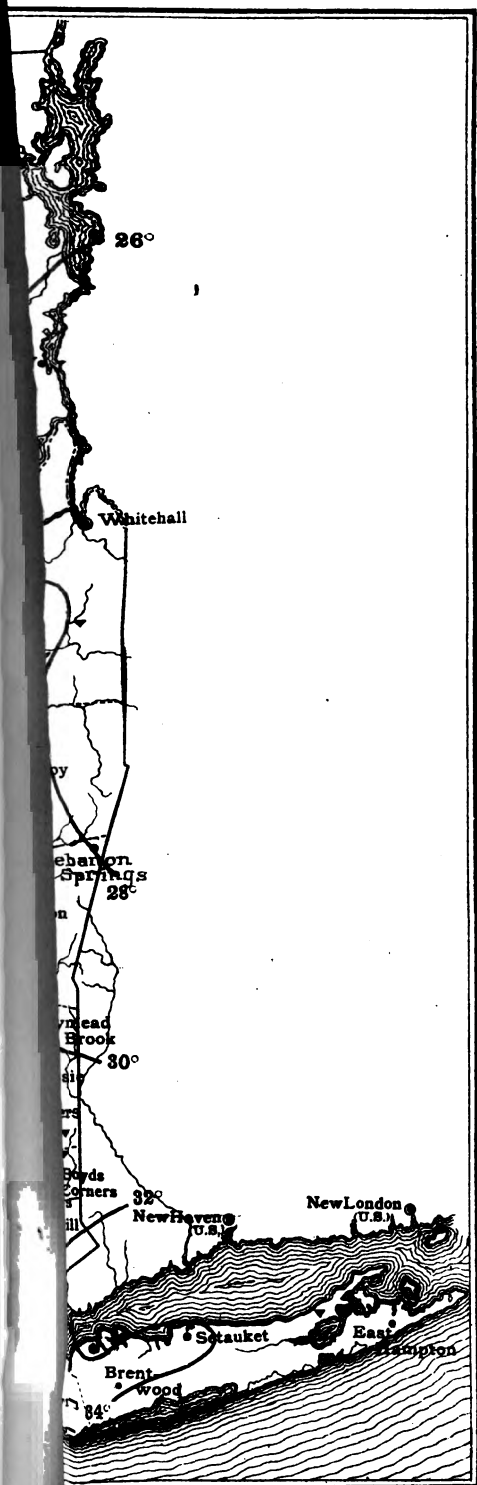
‡ Record for the month incomplete.  
Blood's Depot.

| Reports too late to be used in computing the

## TEMPERATURE AND RAIN

STATION.	County.	TEMPERATURE (DEGREES FAHR.).									
		Normal for the month of March.	Length of record, years.	Record begins.	Record ends.	Mean for March, 1893.	Departure from the normal.	EXTREMES OF MONTHLY MEAN TEMPERATURE FOR MARCH.			
								Highest.	Year.	Lowest.	Year.
<i>Western Plateau</i> .....		29.3				31.3	+1.9				
Angelica*	Allegany.....	27.9	11	1864	1893	22.7	-1.8	37.8	1871	21.5	1872
Humphrey.....	Cattaraugus.....	27.2	11	1883	1893	29.8	+2.6	32.2	1889	18.0	1885
Elmira*.....	Chemung.....	32.9	14	1852	1893	34.3	+1.4				
<i>Eastern Plateau</i> .....		28.0				30.9	+2.0				
Cooperstown.....	Otsego.....	27.3	38	1854	1893	27.5	-0.2	36.0	1878	18.3	1885
Waverly.....	Tioga.....	28.7	12	1883	1893	32.4	+3.7	34.7	1889	21.8	1885
<i>Northern Plateau</i> .....		27.4				26.0	-3.3				
Keene Valley*	Essex.....	25.4	7	1879	1891						
Lowville.....	Lewis.....	29.3	26	1827	1893	26.0	-3.3				
<i>Coast Region</i> .....		35.4				35.1	-0.2				
New York City.....	New York.....	36.3	23	1871	1893	36.0	-0.3	44.0	71-78	30.0	1885
Setauket.....	Suffolk.....	34.4	8	1886	1893	34.2	-0.2	38.5	1889	30.6	1888
<i>Hudson Valley</i> .....		33.8				32.1	-1.7				
Albany.....	Albany.....	31.7	20	1874	1893	31.4	-0.3	38.4	1878	23.1	1885
Honeyhead Brook.....	Dutchess.....	30.6	11	1883	1893	31.1	+0.5	36.6	1889	24.4	1885
Poughkeepsie*	".....	35.4	22	1828	1893	31.8	-3.6				
West Point.....	Orange.....	35.2	62	1824	1893	33.2	-2.0	47.5	1865	26.7	1885
Rondout*	Ulster.....	36.3	23	1828	1893	33.0	-3.3	42.2	1831	29.5	1886
<i>Mohawk Valley</i> .....		31.4				28.2	-3.2				
Utica*	Oneida.....	31.4	32	1836	1893	28.2	-3.2	38.9	1845	22.6	1836
<i>Champlain Valley</i> .....		27.0				28.2	-3.8				
Plattsburgh Barracks.....	Clinton.....	27.0	35	1839	1893	28.2	-3.8	34.1	1849	19.7	1872
<i>St. Lawrence Valley</i> .....		28.0				27.7	-0.3				
Madison Barracks.....	Jefferson.....	30.0	33	1829	1893	27.8	-2.2	41.4	1881	15.2	1872
Canton*.....	St. Lawrence.....	28.4	31	1862	1893	27.8	+1.4	35.0	1871	16.2	1865
Nor h Hammond.....	".....	28.5	14	1866	1893	29.0	+2.5	33.6	1876	16.7	1872
Potsdam*	".....	29.0	24	1828	1893	26.2	-2.8	35.4	1831	20.1	1892
<i>Great Lakes</i> .....		30.5				31.0	+0.5				
Buffalo.....	Erie.....	29.7	23	1871	1893	30.5	+0.8	38.6	1878	19.7	1885
Rochester.....	Monroe.....	30.0	23	1871	1893	31.2	+1.2	40.1	1878	20.0	1885
Fort Niagara.....	Niagara.....	33.1	26	1839	1893	34.4	+1.3	36.0	1860	28.4	1863
Baldwinsville.....	Onondaga.....	30.2	19	1849	1893	29.8	-0.4				
Oswego.....	Oswego.....	30.2	23	1871	1893	28.9	-1.3	41.9	1878	18.7	1865
Palermo.....	Wayne.....	27.6	41	1854	1893	28.3	+0.7	35.9	1871	17.1	1855
Lyons.....	Wayne.....	30.7	6	1860	1893	31.5	+0.8				
Erie, Pennsylvania.....	Erie.....	32.3	20	1874	1893	33.0	+0.7	42.0	1878	26.0	1885
<i>Central Lakes</i> .....		31.0				31.2	+0.2				
Geneva.....	Ontario.....	31.9	16	1854	1893	31.7	-0.2				
Ithaca.....	Tompkins.....	30.1	15	1879	1893	30.8	+0.7	34.1	1882	21.4	1885
Average departure.....							-0.2				

\* Location of the instruments has been changed during the period covered by the record.



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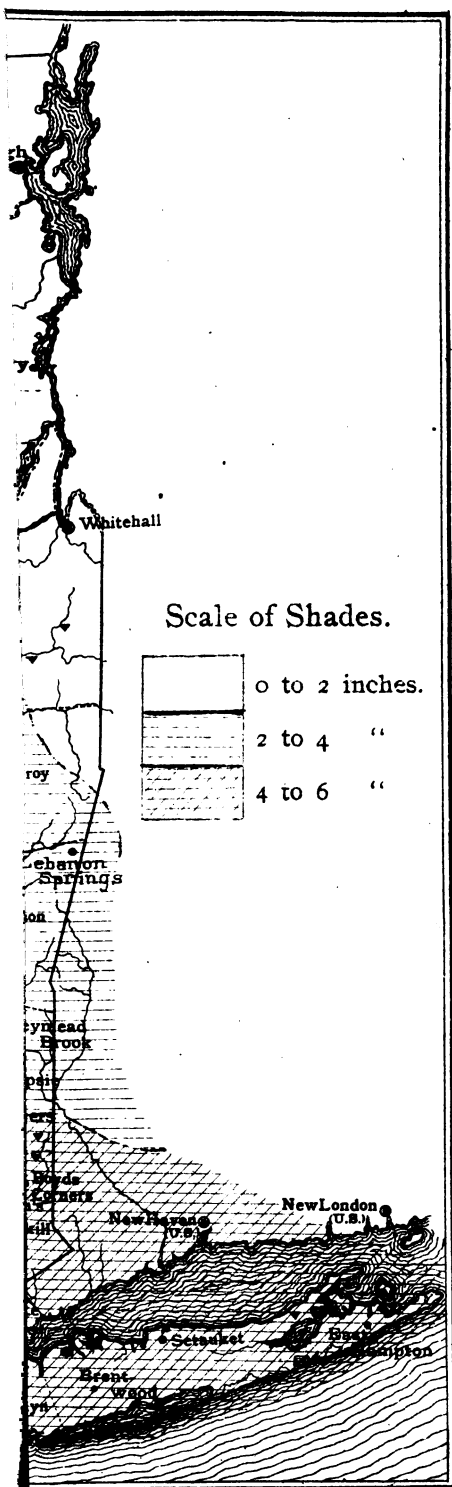
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## FALL STATISTICS—MARCH.

		RAINFALL (INCHES).									
STATION.	County.	Average for the month of March.	Length of record, years.	Record begins.	Record ends.	Total for March, 1893.	Departure from the average.	EXTREMES OF MONTHLY PRECIPITATION FOR MARCH.			
								GREATEST.		LEAST.	
								Amount.	Year.	Amount.	Year.
<i>Western Plateau</i> .....		2.60	...	...	...	2.52	-0.08	...	...	...	...
Angelica .....	Allegany	2.63	7	1871	1893	2.87	+0.24	3.57	1892	1.38	1872
Humphrey .....	Cattaraugus	2.87	11	1883	1893	2.63	-0.24	3.50	1884	1.39	1885
Elmira .....	Chemung	2.29	16	1852	1893	2.05	-0.24	...	...	...	...
<i>Eastern Plateau</i> .....		2.77	...	...	...	2.51	-0.06	...	...	...	...
Cooperstown .....	Otsego	2.62	40	1854	1893	2.13	-0.49	4.32	1877	0.55	1885
Port Jervis .....	Orange	3.16	9	1880	1892	...	...	5.68	1860	1.18	1885
Waverly .....	Tioga	2.53	12	1882	1893	2.29	+0.36	4.37	1884	0.33	1885
<i>Northern Plateau</i> .....		2.51	...	...	...	1.86	-0.28	...	...	...	...
Keene Valley .....	Essex	2.88	7	1879	1891	...	...	...	...	...	...
Lowville .....	Lewis	2.14	24	1827	1893	1.86	-0.28	...	...	...	...
<i>Coast Region</i> .....		4.40	...	...	...	4.14	-0.26	...	...	...	...
New York city .....	New York	4.14	23	1871	1893	4.47	+0.33	7.90	1876	1.19	1885
Setauket .....	Suffolk	4.67	8	1885	1893	3.82	+0.85	7.32	1888	2.74	1889
<i>Hudson Valley</i> .....		3.23	...	...	...	3.40	+0.28	...	...	...	...
Albany .....	Albany	2.71	20	1874	1893	2.00	-0.71	4.28	1876	0.62	1885
Honeymead Brook .....	Dutchess	2.64	10	1884	1893	3.08	+0.24	4.35	1884	1.05	1885
West Point .....	Orange	3.67	45	1840	1893	3.94	+0.27	8.71	1876	0.75	1842
Boyd's Corners .....	Putnam	3.62	9	1866	1892	...	...	5.66	1860	1.49	1867
Rondout .....	Ulster	3.29	23	1829	1893	4.60	+1.31	5.77	1890	1.38	1839
<i>Mohawk Valley</i> .....		2.97	...	...	...	3.16	+0.19	...	...	...	...
Utica .....	Oneida	2.97	35	1826	1893	3.16	-0.19	7.50	1888	0.51	1836
<i>Champlain Valley</i> .....		2.01	...	...	...	0.68	-1.33	...	...	...	...
Plattsburgh Barracks .....	Clinton	2.01	33	1840	1893	0.68	-1.33	5.05	1840	0.28	1850
<i>St. Lawrence Valley</i> .....		2.75	...	...	...	0.95	-1.80	...	...	...	...
Malone .....	Franklin	2.61	14	1830	1893	0.85	-1.76	...	...	...	...
Madison Barracks .....	Jefferson	3.79	31	1840	1893	1.22	-2.57	5.89	1852	0.92	1885
North Hammond .....	St. Lawrence	2.86	15	1866	1893	0.98	-1.88	5.56	1873	1.35	1872
Potsdam .....		1.73	25	1828	1893	0.75	-0.98	4.40	1890	0.40	1836
<i>Great Lakes</i> .....		2.68	...	...	...	1.85	-0.84	...	...	...	...
Buffalo .....	Erie	2.65	23	1871	1893	2.62	-0.03	5.54	1872	1.03	72-83
Rochester .....	Monroe	2.95	23	1871	1893	1.81	-1.14	7.02	1873	0.94	1887
Fort Niagara .....	Niagara	2.15	34	1841	1893	2.21	+0.06	4.46	1852	0.37	1851
Oswego .....	Oswego	2.68	23	1871	1893	1.23	-1.45	5.47	1873	0.48	1885
Palermo .....		2.78	41	1854	1893	1.32	-1.46	7.00	1859	0.80	1885
Erie, Pennsylvania .....	Erie	2.90	20	1874	1893	1.89	-1.01	5.41	1878	1.09	1874
<i>Central Lakes</i> .....		2.20	...	...	...	2.02	-0.18	...	...	...	...
Geneva .....	Ontario	2.04	22	1850	1893	1.56	-0.48	5.23	1862	0.66	1867
Ithaca .....	Tompkins	2.37	15	1879	1893	2.49	+0.12	3.28	1890	0.49	1885
Average departure .....		...	...	...	...	...	-0.53	...	...	...	...



## Meteorological Summary for April, 1893.

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The average atmospheric pressure (reduced to sea-level and 32 degrees Fahr.) for the State of New York during April was 30.03 inches. The highest barometer was 30.60 inches, at Number Four, Lewis county, on the twenty-sixth; and the lowest was 29.36 inches at Erie, Pa., on the first. The mean pressure increased rapidly from the western toward the eastern section of the State, reaching a maximum over the Atlantic. The average of the mean pressure at six stations of the National Bureau was 0.05 inches above the normal value. The least departure was + 0.01 inch at Erie, and the greatest + 0.10 inch at Albany.

The mean temperature of the State, as derived from the records of seventy-one stations, was 41.6 degrees; the highest general daily mean being 52.3 degrees on the thirteenth; and the lowest 31.7 degrees on the sixth. The highest local monthly mean was 48.0 degrees at New York City; and the lowest was 36.6 degrees at Malone. The maximum temperature recorded during the month was 79 degrees at Geneva on the thirteenth; while the minimum was 11 degrees at Malone on the second. The mean monthly range of temperature was 48.1 degrees; the greatest range being 61 degrees at Ogdensburgh, and the least 38 degrees at New York city. The mean daily range was 18.9; the greatest daily range being 47 degrees at Ogdensburgh on the first; and the least 2 degrees at several stations on the second and fifth. The mean temperatures of the various sections of the State were as follows: The Western plateau, 42.5 degrees; the Eastern plateau, 41.6 degrees; the Northern plateau, 36.2 degrees; the Coast region, 46.2 degrees; the Hudson Valley, 44.6 degrees; the Mohawk valley, 42.4 degrees; the Champlain Valley, 37.6 degrees; the St. Lawrence valley, 39.4 degrees; the Great Lake region, 42.3 degrees; and the Central Lake region,

**43.1 degrees.** The average of the mean temperatures at twenty-nine stations possessing records for previous years was 1.6 degrees below the normal value. Excesses of temperature were reported from only six scattered stations.

The mean relative humidity was 72 per cent. The mean dew point was 34 degrees.

The average precipitation for the State was 3.46 inches of rain and melted snow. The general maximum, exceeding four inches, obtained over the southeastern and southwestern sections of the State; the amount over the remaining portions averaging about three inches. The greatest local rainfall was 6.92 inches at Eden Centre, Erie county; while the least was 1.67 inches at Lyons. Precipitation to equal or exceed 1.50 inches in twenty-four hours occurred as follows: On the fourteenth, 1.50 inches at West Point; on the twentieth, 1.80 inches at Rondout, 1.74 inches at New York city, 1.53 inches at Lockport, 1.87 inches at Little Valley, 1.90 inches at Minnewaska, and 1.50 inches at Brentwood. The total snowfall over the State averaged about 9 inches; the greatest average amount being 15 inches on the Northern plateau, and the least 3 inches in the Coast region. The greatest local snowfall reported was 21 inches at Lebanon Springs, Columbia county. The average precipitation at twenty-seven stations possessing records for previous years was 1.15 inches above the normal amount. The precipitation was above the normal at all stations excepting Albany and West Point, where deficiencies were reported. At Humphrey, Waverly, Setauket, Madison Barracks and Ithaca, the amounts were the greatest recorded during the several periods of observation.

The average number of days on which the precipitation amounted to 0.01 inch or more, was 11.4. The number of rainy days was more uniform than usual in the various regions of the State. The average number of clear days was 5.7; of partly cloudy days 11.7; and of cloudy days 12.7. The average cloudiness for the State was 51 per cent (overcast = 100 per cent). The cloudiness in the Atlantic Coast region was considerably below the amount over the remainder of the State.

The prevailing direction of the wind was from the west. The average total travel at six stations of the National Bureau and at Ithaca was 6,984 miles; the travel being much in excess of the usual value for April, both in the Coast and Great Lake regions. The maximum velocity recorded was fifty-nine miles per hour, at Erie, on the seventh.

Hail and sleet storms were reported on the third, fourth, seventh, eighth, thirteenth, fourteenth, fifteenth, sixteenth, twentieth, twenty-second, twenty-third and twenty-sixth.

Auroras were observed on the thirteenth, eighteenth and nineteenth.

Thunderstorms occurred as follows: On the sixth at South Canisteo; on the seventh at nineteen stations of all sections excepting the coast region; on the eighth at twenty-five stations covering substantially the same territory as the preceding storm; on the thirteenth at two stations of the Northern plateau; on the fourteenth at Setauket, L. I.; on the seventeenth and eighteenth at South Canisteo; on the twentieth at five stations in the western and northwestern portions of the State; on the twenty-first at Malone; and on the twenty-fifth at Humphrey.

Solar halos were observed on the second, fourteenth, sixteenth, eighteenth, nineteenth, twenty-fifth and twenty-eighth; and lunar halos on the second, twenty-first, twenty-fourth, twenty-fifth, twenty-sixth and twenty-eighth.

The data for this summary have been obtained from the records of sixty Voluntary Observers, six stations of the National Service, five military posts and eighteen special rainfall observers.

During April the weather of New York was influenced by eight areas of high, and nine areas of low pressure; the number of depressions which passed in the vicinity of New York differing little from the usual storm development during April of previous years. Five of the depressions passed to the north of the State in their eastward course, on the first, fourth, thirteenth and twenty-seventh; two passed over the State on the seventeenth and twentieth; one storm moved up the coast on the fifteenth; and at the close of the month a general depression

had passed eastward as far as the Lower Lakes. The disturbances were, in most cases, much more energetic than usual at this season of the year; and this fact, together with the proximity of the average storm track to New York, gave much stormy weather and frequent high winds. The anticyclonic areas for the most part passed over the northern States and Canada to the Atlantic, showing a tendency to linger over the coast region, where there was an abnormally high barometric pressure which decreased rapidly to the westward; a condition giving frequent easterly winds, with much damp and cloudy weather. The early part of the month was characterized by large and abrupt changes of temperature; the mean for the period being somewhat above the normal. During the remainder of the month the temperature remained quite uniformly below the normal; the deficiency being greatest in the southern part of the State. The greater proportion of the rainfall of the month occurred during four periods, central on the seventh (fourteenth-fifteenth), twentieth and twenty-seventh, on which dates the State was subject to depressions of great energy and magnitude.

On the sixth and seventh from four to nine inches of snow fell, but was quickly melted by the warm rains of the eighth. During the second week of April frost had nearly disappeared from the ground, gardening and potato-planting were commenced in the southeastern section, and a few oats were sown. Cold and cloudy weather during the remainder of the month retarded the growth of vegetation, and delayed farm work. Severe frosts occurred on the nineteenth and twenty-sixth, ice forming to a thickness of one-half inch; but vegetation was not sufficiently advanced to sustain injury.

The month was notable for the frequency of violent local storms, those of the twentieth and twenty-first being most severe and widespread. In the vicinity of Honeymead Brook, Dutchess county, a number of small tornadoes were developed, uprooting or twisting off large trees; while in exposed localities throughout the State considerable damage was sustained from the wrecking of buildings and fences. Several buildings were fired by thunderstorms on the seventh and eighth.

## METEOROLOGICAL DATA

LOCATION OF STATIONS.			BAROMETER.						HUMIDITY.		TEMP.		
STATIONS.	County.	Elevation, feet.	Mean.	Highest.	Date	Lowest.	Date.	Monthly range.	Mean relative.	Dew point (degrees).	Mean of tri-daily obser- vations.	Mean of maximum and minimum.	Highest.
<i>Western Plateau.</i>												42.5	75
Alfred Centre	Allegany	1824										39.7	67
Angelica	"	1340									41.0	42.1	73
Friendship	"	1550							70	34	41.7	44.2	74
Humphrey	Cattaraugus	1950							79	39	41.6	41.1	70
Arkwright	Chautauqua	1280										140.6	66
Elmira	Chemung	883									46.6	46.6	..
LeRoy	Genesee	888										42.5	72
Mt. Morris	Livingston	625										43.4	74
Lockport	Niagara	616										44.5	67
Victor	Ontario	650										42.5	75
Wedgewood	Schuyler	1350							79	34	39.7	41.8	74
Addison	Steuben	1000									43.7	44.6	74
South Canisteo	"	1480									44.0	42.5	73
Arcade	Wyoming	1557									39.0	39.8	68
Varysburg	"											41.9	74
Italy Hill	Yates	1650											
<i>Eastern Plateau</i>													
Binghamton	Broome	870							74	34	43.1	41.6	74
Oxford	Chenango	1250										41.8	66
Cortland	Cortland	1120										141.0	66
South Kortright	Delaware	1700										40.7	68
Brookfield	Madison	1350							72	32	39.8	40.1	65
Middletown	Orange	680							66	32	42.5	45.0	72
Port Jervis	"	470										46.0	74
Cooperstown	Otsego	1500									39.8	39.1	63
New Lisbon	"	1234									89.1	40.2	63
Quaker Street	Schenectady	973										39.6	64
Perry City	Schuyler	1038									40.8	41.0	72
Waverly	Tioga	825									43.9	44.7	72
Newfield Summit	Tompkins	2000										88.5	67
Minnewaska	Ulster	1800							74	33	39.5	41.5	65
<i>Northern Plateau.</i>													
Lyon Mountain	Clinton	1917										36.2	66
Keene Valley	Essex	1015											
Amersand	Franklin	1600	30.02	30.53	6	29.41	1	1.12			36.1	36.6	62
Hiawatha House	Franklin												
Gloversville	Fulton	802									39.3	40.1	66
Blue Mountain Lake	Hamilton												
Bisby Lodge	Herkimer	1950											
Carthage	Jefferson										38.4	37.7	66
Constableville	Lewis	1246									35.5	37.8	61
Lowville	"	900										38.9	66
Number Four	"	1571	30.07	30.60	26	29.49	1	1.11				36.7	62
Turin	"	1240										37.0	60
<i>Coast Region.</i>													
New York City	New York	185	30.07	30.56	7	29.54	4	1.02	71	37		46.2	72
Willet's Point	Queens											46.8	72
Brentwood	Suffolk	75									43.6	44.7	65
Setauket	"	40									44.2	45.7	65
<i>Hudson Valley.</i>													
Albany	Albany	85	30.06	30.56	6	29.60	4	0.96	71	34		44.6	74
												44.0	72

FOR APRIL, 1893.

TEMPERATURE — (IN DEGREES FAHR.).						SKY.			PRECIPITATION — (INCHES).						WIND.			
Date.	Lowest.	Date.	Monthly range.	Mean daily range.	Greatest daily range.	Date.	Least daily range.	Date.	Number of clear days.	Number of partly cloudy days.	Number of cloudy days.	Number of days on which 0.01 or more inches fell.	Total.	Greatest rainfall.	Duration +	Date.	Total snow fall.	Prevailing direction.
13 15 16	49	19	41	3	3	de	5.2	13.2	11.6	12	3	3.95	1.53	H.	M.	20	....	N. E.
4 23 23	44	18	35	e	3	15	...	...	...	...	...	2.23	0.60	...	...	3	4.0	W.
13 25 25	48	17	35	3	4	15	3	18	9	15	15	4.37	0.85	...	...	7	4.5	S. W.
2 22 16	52	23	39	26	9	bf	3	15	12	17	17	4.34	0.77	...	...	7	...	S. W.
13 22 2	48	20	33	20	7	14	0	14	16	17	17	5.61	1.35	...	...	20	10.5	S. W.
8 24 2	42	14	27	26	3	23	...	...	...	...	...	3.55	0.58	...	...	7	0.8	N. W.
8 24 2	48	17	34	3	5	14	1	18	11	13	13	3.82	1.20	...	...	15	14.0	W.
6 19 16	55	24	40	x	10	23	4	11	15	9	9	3.08	1.15	...	...	15	...	W.
13 27 27	40	15	30	11	5	6	4	16	10	8	8	4.01	1.53	...	...	20	8.0	S. W.
13 24 24	51	22	41	3	9	15	9	11	10	12	12	3.27	0.60	...	...	14	12.5	W.
13 22 22	52	22	37	3	3	20	4	17	9	13	13	3.55	0.58	4	30	7	6.5	N. W.
13 27 19	47	20	36	28	4	12	9	14	7	6	6	3.50	0.58	...	...	21	1.5	S. W.
13 23 23	50	21	34	y	7	cc	11	6	13	17	17	5.84	1.14	...	...	20	9.6	N. W.
13 15 16	53	19	34	3	6	23	3	14	13	13	13	4.47	0.72	...	...	15	12.5	...
8 16 16	58	19	37	3	6	cd	...	...	...	...	...	3.62	0.88	...	...	15	8.0	...
4 18 6	45	19	40	aa	2	12	6.4	11.0	12.6	12	8	3.40	1.32	...	...	20-21	...	...
4 25 2	46	20	33	3	7	7	5	12	13	15	15	3.36	0.54	15	0	20	3.0	S. E.
4 23 2	43	20	37	28	8	20	7	15	8	13	13	4.89	0.76	...	...	15	10.5	N. W.
4 27 2	39	15	28	v	6	20	...	...	...	...	...	3.12	0.62	...	...	7	...	N. W.
9 19 19	49	23	40	9	9	2	...	...	...	...	...	3.35	0.56	23	0	14-15	10.8	S.
4 23 23	42	18	30	21	5	20	5	11	14	15	15	1.71	0.50	11	0	20	8.0	N. W.
4 26 7	46	15	29	3	8	ce	10	5	15	11	11	3.57	1.30	...	...	20	6.0	W.
4 26 3	48	22	35	3	8	27	8	9	13	11	11	3.61	1.32	...	...	20-21	4.0	W.
4 24 3	39	16	29	3	5	20	9	7	14	14	14	2.96	0.70	...	...	20	8.0	N. E.
c 21 1	42	19	33	3	4	20	3	6	21	15	15	3.30	0.93	...	...	20	8.0	S.
4 18 6	46	20	31	3	5	20	12	10	8	10	10	3.15	0.50	24	0	20	3.0	E.
13 22 2	50	20	33	ab	5	20	3	16	11	15	15	3.58	0.61	...	...	21	...	N. W.
4 24 19	48	21	40	28	4	20	2	19	9	15	15	3.39	0.70	...	...	20	2.2	N. W.
13 20 3	47	16	32	3	2	12	...	...	...	...	...	4.20	1.90	23	0	20-21	...	...
9 21 2	44	17	30	ac	6	7	...	...	...	...	...	...	...	...	...	...	...	...
a 12 2	48	19	38	11	5	cf	6.1	9.9	14.0	12.0	12.0	3.52	1.38	...	...	23	...	...
8 12 2	50	20	38	11	5	18	7	11	12	10	10	2.95	1.11	...	...	20-21	14.5	...
4 19 3	47	19	32	26	5	15	5	8	17	16	16	3.57	0.70	...	...	15	8.6	W.
13 13 2	53	18	37	26	7	23	...	...	...	...	...	2.67	0.89	23	0	15	11.5	W.
13 12 17	49	20	34	17	11	27	5	12	13	7	7	2.62	0.87	7	0	20	13.0	S.
13 18 2	48	20	35	26	7	15	7	10	13	12	12	3.89	0.81	...	...	15	15.0	N. W.
13 14 2	48	17	27	3	6	27	7	16	12	12	12	3.98	1.38	...	...	23	16.7	W.
13 16 e	44	17	33	26	8	15	6	11	13	15	15	4.13	0.77	...	...	7	18.2	N.
4 23 3	39	16	36	5	4	dd	10.0	8.7	11.3	10.7	10.7	5.01	1.74	...	...	20	...	...
4 31 7	38	14	27	1	4	29	8	9	13	15	15	6.36	1.74	...	...	20	3.0	S. E.
4 31 3	41	17	36	5	4	15	...	...	...	...	...	5.33	1.60	...	...	14	...	N. E.
14 23 3	42	20	32	19	5	13	13	9	8	8	8	3.40	1.50	24	0	20-21	2.0	S. W.
4 30 3	35	15	26	8	6	10	9	8	13	9	9	4.95	1.11	...	...	20	3.0	W.
4 13 7	47	20	45	4	3	20	5.6	12.8	11.6	11.4	11.4	3.35	1.85	23	40	20-21	...	...
4 24 7	48	18	30	11	7	15	6	12	12	14	14	2.10	0.49	...	...	15	...	N. W.

## METEOROLOGICAL DATA

LOCATION OF STATIONS.		BAROMETER.						HUMIDITY.		TEM.			
STATIONS.	County.	Elevation, feet.	Mean.	Highest.	Date.	Lowest.	Date.	Monthly range.	Mean relative.	Dew point (degrees).	Mean of tri-daily observations.	Mean of maximum and minimum.	Highest.
<i>Hudson Valley (Con.)</i>													
Lebanon Springs.....	Columbia.....	880.....	.....	.....	.....	.....	.....	.....	.....	.....	40.5	40.5	64
Honeymead Brook.....	Dutchess.....	450.....	.....	.....	.....	.....	.....	.....	68	32	44.0	43.8	70
Poughkeepsie.....	.....	180.....	.....	.....	.....	.....	.....	.....	.....	.....	46.2	46.2	74
Wappinger's Falls.....	Dutchess.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	45.7	45.7	73
West Point.....	Orange.....	167.....	.....	.....	.....	.....	.....	.....	.....	.....	47.7	47.7	73
Boyd's Corners.....	Putnam.....	546.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Carmel.....	.....	500.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Rondout.....	Ulster.....	150.....	.....	.....	.....	.....	.....	.....	.....	.....	44.2	44.2	69
<i>Mohawk Valley</i>													
Rome.....	Oneida.....	445.....	.....	.....	.....	.....	.....	.....	.....	.....	42.4	42.4	70
Utica.....	.....	537.....	.....	.....	.....	.....	.....	.....	.....	.....	43.7	43.7	70
											41.2	41.2	67
<i>Champlain Valley</i>													
Plattsburgh.....	Clinton.....	150.....	.....	.....	.....	.....	.....	.....	.....	.....	37.6	37.6	66
Plattsburgh Barracks.	.....	125.....	.....	.....	.....	.....	.....	.....	.....	.....	37.6	37.6	66
Port Henry.....	Essex.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Saratoga.....	Saratoga.....	270.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Glens Falls.....	Warren.....	240.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Whitehall.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
<i>St. Lawrence Valley</i>													
Malone.....	Franklin.....	810.....	.....	.....	.....	.....	.....	.....	.....	.....	37.5	37.5	66
Madison Barracks.....	Jefferson.....	266.....	.....	.....	.....	.....	.....	.....	.....	.....	38.8	38.8	67
Watertown.....	.....	486.....	.....	.....	.....	.....	.....	.....	.....	.....	40.3	40.3	70
Canton.....	St. Lawrence.....	304.....	.....	.....	.....	.....	.....	.....	.....	.....	39.2	39.2	69
North Hammond.....	.....	300.....	.....	.....	.....	.....	.....	.....	.....	.....	39.3	39.3	68
Ogdensburg.....	.....	258.....	.....	.....	.....	.....	.....	.....	.....	.....	38.8	38.8	74
Potsdam.....	.....	306.....	.....	.....	.....	.....	.....	.....	.....	.....	37.6	37.6	67
<i>Great Lakes.</i>													
Dunkirk.....	Chautauque.....	590.....	.....	.....	.....	.....	.....	.....	.....	.....	42.8	42.8	76
Buffalo.....	Erie.....	690.....	30.00	30.43	6	29.36	1	1.07	72	32	41.4	41.4	70
Eden Centre.....	.....	690.....	.....	.....	.....	.....	.....	.....	.....	.....	41.0	41.0	63
Brockport.....	Monroe.....	520.....	.....	.....	.....	.....	.....	.....	.....	.....	44.0	44.0	68
Rochester.....	.....	621.....	30.04	30.51	6	29.40	1	1.11	74	34	42.4	42.4	76
Fort Niagara.....	Niagara.....	263.....	.....	.....	.....	.....	.....	.....	.....	.....	43.6	43.6	68
Hess Road Station.....	Niagara.....	330.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Baldwinsville.....	Onondaga.....	390.....	.....	.....	.....	.....	.....	.....	.....	.....	42.0	42.4	74
Albion.....	Orleans.....	521.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Oswego.....	Oswego.....	344.....	30.03	30.53	26	29.38	1	1.15	72	30	39.9	39.9	71
Palermo.....	.....	460.....	.....	.....	.....	.....	.....	.....	.....	.....	40.0	40.0	71
Lyons.....	Wayne.....	407.....	.....	.....	.....	.....	.....	.....	.....	.....	42.6	42.8	73
Erie, Pa.....	Erie.....	681.....	29.99	30.35	6	29.40	1	0.95	75	35	44.0	44.0	76
<i>Central Lakes.</i>													
Fleming.....	Cayuga.....	1000.....	.....	.....	.....	.....	.....	.....	.....	.....	41.9	43.1	73
Geneva.....	Ontario.....	459.....	.....	.....	.....	.....	.....	.....	.....	.....	43.1	44.2	73
Watkins.....	Schuyler.....	787.....	.....	.....	.....	.....	.....	.....	.....	.....	43.1	43.5	78
Romulus.....	Seneca.....	719.....	.....	.....	.....	.....	.....	.....	75	32	.....	43.8	74
Hammondsport.....	Steuben.....	800.....	.....	.....	.....	.....	.....	.....	.....	.....	*42.3	.....	.....
Ithaca.....	Tompkins.....	840.....	30.02	30.47	6	29.40	1	1.07	.....	.....	41.5	43.0	75
Mean.....			30.03	30.60	26	29.36	1	1.06	72	34	.....	41.6	79

\* Mean of the tri-daily observations. † Mean of the maximum and minimum by the  
from the tri-daily observations are derived by the formula, 7 a. m. + 2 p. m. + 9 p. m. + 9 p. m. +  
four hours.

(a) 4, 13; (b) 8, 18; (c) 28, 30; (d) 4, 5; (e) 2, 26; (f) 6, 7; (g) 6, 15; (h) 11, 26; (i) 8, 19; (j) 3, 7  
(w) 8, 11, 26; (x) 8, 4, 11; (y) 8, 8, 28; (aa) 9, 28; (ab) 3, 26; (ac) 8, 9; (ad) 19, 26; (ae) 8, 21  
(ce) 7, 10; (cf) 15, 18; (dd) 15, 29; (de) 15, 27; (df) 15, 21; (ee) 15, 22; (ef) 6, 19; (eg) 15, 20;

FOR APRIL, 1893 — (Concluded).

TEMPERATURE — (IN DEGREES FAHR.).						SKY.		PRECIPITATION — (INCHES).						WIND.				
Date.	Lowest.	Date.	Monthly range.	Mean daily range.	Greatest daily range.	Date.	Least daily range.	Date.	Number of clear days.	No. of partly cloudy days.	Number of cloudy days.	Number of days on which 0.01 or more inches fell.	Total.	Greatest rainfall.	Duration †	Date.	Total snow fall.	Prevailing direction.
4 13	7	51	22	34	28	7 27	8 12	15	13	4.68	1.85	H. 23	M. 40	20-21	21.0	W.		
4 24	7	46	19	33	3	5 20	4 12	14	12	2.93	0.74	...	...	...	6.0	S. W.		
4 28	7	32	24	36	ad	11 de	7 13	10	9	2.98	0.93	...	...	...	4.0	N. W.		
4 26	r	46	19	31	2	3 20	8 15	7	15	3.43	0.80	15	0	20	7.5	N. E.		
d 28	s	45	22	45	4	11 15	...	...	11	3.16	1.11	...	...	20	6.0	N. W.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
4 26	7	43	17	27	3	5 27	...	...	...	...	...	7	4.20	1.80	...	20	8.0	N. E.
a 22	2	46	30	40	17	5 15	0	19.0	11.0	12.5	8.72	0.98	...	...	8	...	...	
a 23	17	47	20	40	17	6 af	...	...	...	13	3.97	0.93	...	...	8	...	...	
a 23	2	45	19	32	ae	5 15	0	19	11	12	3.48	0.85	...	...	7	9.0	W.	
8 13	7	53	19	45	8	8 15	...	...	...	8	2.11	1.30	13	40	15	...	...	
8 13	7	53	19	45	8	3 15	...	...	...	8	2.11	1.30	13	40	15	12.5	W.	
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
8 11	2	55	21	47	1	3 15	6.5	10.1	13.4	10.1	8.04	1.35	...	...	21	...	...	
8 11	2	55	20	37	11	9 25	6	6	18	13	8.44	0.90	13	0	15	15.2	N. W.	
13 15	16	52	20	35	af	3 15	...	...	...	14	8.98	1.04	...	...	20	7.8	W.	
13 16	16	54	19	32	13	9 12	1	14	15	14	...	...	...	...	...	...	W.	
8 15	2	54	20	33	8	7 15	7	14	9	8	2.29	0.76	...	...	15	9.3	...	
20 16	16	52	21	32	bb	8 27	3	8	19	10	3.52	1.35	...	...	21	8.0	S.	
8 13	2	61	22	47	1	10 14	8	13	9	6	1.95	...	...	...	...	5.0	N. W.	
q 13	2	54	22	43	8	10 15	14	6	10	7	3.07	1.20	...	...	15	10.0	S. W.	
8 19	7	48	16	39	13	2 15	5.5	11.1	13.4	13.6	3.63	1.40	...	...	20	...	...	
8 27	11	43	13	30	bc	4 ee	...	...	...	16	3.70	0.59	...	...	15	...	...	
8 24	2	39	14	29	26	6 15	1	20	9	16	4.49	1.27	...	...	20	...	S. W.	
m 20	26	48	19	36	3	6 22	7	4	19	11	6.92	1.40	...	...	20	11.0	N. E.	
8 19	7	57	20	37	8	9 ef	...	...	...	15	3.62	...	...	...	...	...	...	
8 25	2	51	16	35	3	4 6	6	13	11	13	3.97	1.00	...	...	7	...	S. W.	
13 26	16	42	12	32	16	4 15	...	...	...	10	3.70	1.35	...	...	20	...	N. W.	
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
13 24	t	50	20	39	13	7 20	12	3	15	15	4.38	0.87	...	...	7	...	N. W.	
8 21	2	50	13	35	8	2 15	5	11	14	18	3.17	0.58	...	...	21	...	W.	
13 22	2	49	18	35	8	3 20	5	11	14	11	3.66	1.00	...	...	15	15.2	N. W.	
13 25	2	48	16	35	8	2 15	4	13	13	7	1.67	0.70	...	...	15	9.5	N. W.	
8 25	21	51	17	36	8	4 14	4	14	12	18	3.67	0.70	...	...	15	...	N. W.	
13 23	2	51	20	39	3	4 eg	6.0	8.5	15.5	10.6	3.27	1.00	...	...	20	...	...	
13 23	2	50	19	34	8	6 12	4	5	21	8	2.62	1.00	14	0	20	10.0	W.	
13 25	2	51	20	37	bd	5 12	...	...	...	8	3.94	0.36	...	...	20	8.2	...	
13 25	19	53	21	39	3	4 20	8	2	20	10	2.96	0.60	...	...	14	...	...	
13 25	26	49	21	38	8	7 15	7	12	11	11	3.02	0.52	6	45	20	10.4	S.	
13 25	19	50	19	34	26	4 15	5	15	10	16	3.79	0.74	15	0	7	8.0	N. W.	
13 11	2	48	19	47	1	2 fg	5.7	11.6	12.7	11.4	3.50	1.85	23	40	20-21	...	W.	

Draper thermograph. [Report received too late to be used in computing means. The means  
 † Blank indicates that the duration is not shown in the original records, but is within twenty.

(k) 2, 3; (m) 3, 8; (n) 16, 26; (p) 6, 26; (q) 2, 17; (r) 3, 6; (s) 3, 4, 7; (t) 1, 2; (u) 7, 26; (v) 3, 4;  
 (af) 17, 26; (bb) 11, 24, 26; (bc) 8, 26; (bd) 8, 11; (be) 15, 20, 23; (bf) 12, 23; (ce) 10, 20; (cd) 22, 23;  
 (f) 12, 23; (fg) 12, 15.



## DAILY AND MONTHLY MEAN

STATIONS.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<i>Western Plateau</i> ..	50	34	49	58	41	38	36	54	40	39	43	46	57	37
Alfred Centre.....	49	30	48	50	40	30	.....	.....	.....	.....	.....	.....	.....	34
Angelica.....	52	38	50	54	42	34	34	54	40	37	40	44	58	40
Friendship.....	51	43	50	58	45	36	36	55	40	40	42	44	61	42
Humphrey.....	48	38	52	51	40	34	35	52	38	36	40	42	54	33
<i>Arkwright</i> .....	38	32	50	46	37	34	43	53	36	39	44	51	49	34
Sherman.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Elmira*.....	52	38	54	56	45	36	38	55	44	39	49	49	62	37
LeRoy.....	50	30	48	50	38	30	36	56	40	42	44	48	54	34
Mount Morris.....	50	32	50	49	42	39	38	56	38	41	43	48	58	34
<i>Lockport</i> .....	50	37	52	51	38	30	40	54	50	42	47	50	56	38
Victor.....	52	34	46	54	33	31	34	56	40	38	42	46	58	38
Wedgewood.....	50	32	44	56	41	30	30	47	37	38	42	42	58	40
Addison.....	54	37	48	58	45	36	35	50	44	37	43	45	59	42
<i>South Canisteo</i> ..	54	34	48	57	42	34	32	52	41	36	38	42	58	42
Arcade.....	47	29	47	49	36	30	36	52	38	37	39	44	54	34
Varysburgh.....	48	30	48	52	40	32	40	58	38	39	40	46	56	38
Italy Hill.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
<i>Eastern Plateau</i> ..	45	34	40	55	40	32	31	47	41	37	41	44	52	44
Binghamton.....	42	37	43	59	41	26	34	50	41	35	43	46	54	46
Oxford.....	46	36	40	53	40	34	30	44	40	36	40	45	52	44
Cortlandt.....	45	34	43	52	37	32	32	48	38	38	40	45	58	40
South Kortright ..	42	30	38	55	37	32	28	46	48	36	40	42	50	42
<i>Brookfield</i> .....	41	30	38	52	36	32	32	48	38	38	40	52	46	37
Middletown.....	49	41	42	59	46	36	30	46	46	39	43	44	50	54
Port Jervis.....	49	44	44	61	48	38	30	44	43	40	46	45	51	54
Cooperstown.....	42	32	38	49	36	30	23	42	36	36	38	46	50	39
New Lisbon.....	42	32	38	48	38	32	32	48	36	35	40	46	52	44
<i>Quaker Street</i> .....	43	32	36	50	38	26	27	45	38	36	44	40	51	42
Perry City.....	46	30	42	56	40	30	30	50	38	36	39	43	58	43
Waverly.....	51	38	45	59	46	38	37	50	41	36	44	46	57	44
Newfield Summit ..	44	32	36	55	37	28	30	56	42	36	40	39	53	42
Minnewaska.....	44	34	40	56	38	26	31	45	50	38	40	40	55	50
<i>Northern Plateau</i> ..	38	27	32	48	35	27	26	46	38	36	40	42	51	39
Lyon Mountain.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Amersand.....	38	24	30	48	32	24	25	48	40	38	40	42	50	36
Gloversville.....	40	32	32	51	38	32	26	44	40	37	42	42	51	42
Carthage.....	41	24	34	51	34	26	39	48	36	36	40	45	54	37
<i>Constableville</i> .....	36	26	32	44	36	28	26	46	40	34	38	42	50	43
Lowville.....	42	28	36	51	36	28	27	47	39	37	40	40	54	44
Number Four.....	36	24	30	46	32	26	28	46	35	35	37	43	52	30
Turin.....	36	27	32	46	34	25	25	44	36	35	40	41	49	40
<i>Coast Region</i> .....	52	47	41	56	49	39	36	49	50	42	46	42	49	53
New York city.....	56	43	46	58	50	40	36	50	50	44	48	44	52	56
Willet's Point.....	52	54	40	59	53	42	36	48	51	41	48	46	47	50
Brentwood.....	48	44	38	52	46	36	34	50	50	41	42	40	48	55
Setauket.....	50	46	41	55	47	38	36	48	48	41	46	43	49	52
<i>Hudson Valley</i> .....	49	42	39	56	47	36	29	43	46	42	44	46	48	49
Albany.....	47	36	40	57	43	32	30	45	45	41	46	48	49	46
Lebanon Springs.....	44	41	34	53	44	31	23	42	44	38	39	42	46	47
Honeynead Brook.....	48	38	40	59	45	32	30	44	44	42	43	49	48	50
<i>Poughkeepsie</i> .....	50	50	40	60	50	38	28	44	46	42	46	46	48	52
Wappinger's Falls.....	50	44	42	59	47	37	32	44	46	42	45	45	48	52
West Point.....	54	50	40	50	56	45	34	43	52	44	46	45	49	53
<i>Boyd's Corners</i> .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Carmel.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Rondout.....	48	38	40	57	45	34	30	40	46	42	43	45	47	46
Peekskill.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
<i>Mohawk Valley</i> .....	41	30	41	55	40	36	33	46	41	39	44	47	55	43
Rome.....	42	32	43	56	42	37	35	48	42	40	46	48	56	44
Utica.....	40	28	39	54	39	34	31	45	40	38	43	46	54	42

## STATE METEOROLOGICAL BUREAU.

97

## TEMPERATURES FOR APRIL, 1893.

15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	Monthly mean.
32	37	42	41	39	37	46	38	39	43	40	41	46	49	46	50	42.5
30	36	39	40	38	35	44	35	36	40	38	38	42	49	44	48	39.7
31	38	42	40	42	36	45	38	38	40	37	39	44	50	46	50	42.1
32	40	43	43	41	38	46	38	38	48	38	42	48	50	48	52	44.2
31	37	41	41	40	35	44	35	35	42	37	42	48	49	46	48	41.1
30	37	40	39	40	38	43	36	34	36	33	42	42	45	42	51	40.6
36	45	46	45	45	40	49	43	43	50	41	50	50	56	50	55	46.6
35	39	44	40	38	36	47	40	40	44	41	42	46	48	46	50	42.5
34	35	42	40	37	40	48	38	41	44	42	42	46	46	48	48	43.4
31	40	46	44	42	33	48	40	44	44	45	40	46	50	44	49	44.5
32	38	40	40	38	40	48	38	42	42	41	41	45	48	46	48	42.5
32	36	44	42	39	34	46	40	40	46	38	40	43	51	48	48	41.8
36	40	43	43	40	38	49	41	48	45	44	43	47	50	50	52	44.5
34	37	42	42	39	35	46	39	39	44	40	40	47	48	43	49	42.5
30	30	39	38	37	35	44	36	34	40	37	40	44	46	44	43	39.8
30	33	41	38	36	41	46	37	37	42	38	40	47	48	45	54	41.9
35	37	41	40	39	35	46	41	40	43	42	39	43	46	46	52	41.6
37	39	44	42	38	38	48	40	42	45	42	41	46	50	50	54	43.4
36	38	42	40	38	35	46	42	42	42	42	40	48	46	48	52	41.8
33	38	41	38	36	37	46	40	38	40	40	41	45	45	48	51	41.0
33	36	39	38	35	34	46	42	38	42	41	36	46	48	48	53	40.7
32	34	40	38	35	34	45	40	38	42	41	41	40	44	46	54	40.1
40	42	42	45	46	39	49	46	45	45	46	40	38	54	52	54	45.0
40	43	43	47	44	40	48	46	44	47	50	42	40	56	52	56	46.0
32	33	39	36	36	32	46	40	38	40	39	36	44	46	43	46	39.1
33	36	38	40	36	33	46	38	38	42	40	38	42	47	45	51	40.2
31	34	46	38	46	32	44	40	41	40	42	33	39	46	46	49	39.8
32	35	42	40	36	36	46	40	38	42	38	38	44	48	46	48	41.0
36	42	45	43	41	36	49	41	42	45	43	42	48	50	53	54	44.7
30	36	41	38	36	32	43	37	38	45	36	38	42	48	45	50	38.5
30	35	38	38	41	38	42	41	39	43	42	34	40	48	50	50	41.5
31	32	34	37	34	34	44	41	38	39	39	37	39	42	44	48	36.2
27	33	33	34	34	34	42	40	36	36	37	32	38	42	37	45	36.6
28	38	38	41	38	38	46	44	40	40	45	38	38	46	48	52	40.1
30	38	36	38	34	34	44	40	38	36	37	38	40	38	.....	.....	37.7
36	32	29	36	34	33	44	44	38	41	38	36	40	41	44	47	37.8
30	35	35	37	32	34	46	41	40	40	39	38	40	42	44	46	38.9
30	30	36	35	30	34	44	38	36	36	39	42	39	43	44	45	36.7
29	28	35	37	33	34	44	39	38	40	38	36	38	41	44	46	37.0
43	42	42	46	47	39	50	49	46	48	46	44	44	51	52	51	46.2
45	44	44	50	50	38	49	48	46	50	50	44	42	56	54	52	47.8
40	44	46	46	48	39	52	47	48	50	44	44	44	50	50	50	46.8
43	40	39	45	44	40	50	50	46	44	44	44	45	48	54	52	44.7
42	42	40	44	46	40	50	50	46	47	46	44	43	49	50	51	45.7
41	38	41	44	43	38	49	47	45	47	49	40	41	53	53	53	44.6
36	39	42	44	42	38	50	48	45	46	49	39	42	51	53	54	44.0
35	34	38	39	37	32	44	43	40	41	43	36	38	46	51	50	40.5
38	38	42	42	39	34	50	48	44	44	46	38	40	53	55	50	43.8
42	38	40	46	43	42	51	50	47	47	48	46	42	56	53	55	46.2
40	36	44	46	47	36	50	48	46	48	49	40	42	56	54	53	45.7
44	43	42	44	46	44	50	47	46	52	52	42	44	60	56	54	47.7
39	39	42	45	50	38	48	42	46	48	47	40	40	52	54	54	44.2
36	38	42	42	37	39	43	48	41	41	48	42	44	46	47	50	42.4
37	39	43	47	37	44	47	52	42	40	51	46	46	46	46	50	43.7
34	36	40	38	37	34	46	44	40	42	44	38	43	43	43	51	41.2

## DAILY AND MONTHLY MEANS

STATIONS.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Champlain Valley.	34	24	31	43	35	22	26	44	38	38	42	34	46	40
Plattsburgh Barracks.	34	24	31	43	35	22	26	44	38	38	42	34	46	40
Glens Falls.														
St. Lawrence Valley.	42	26	35	44	39	26	33	50	38	39	40	47	53	39
Malone.	42	24	30	42	34	20	28	53	37	37	36	43	54	44
Madison Barracks.	44	26	36	43	31	28	38	46	40	36	39	46	54	40
Watertown.	44	26	38	48	35	26	34	56	43	42	34	45	54	38
Canton.	46	26	36	45	32	25	31	52	36	40	42	49	54	36
North Hammond.	40	26	39	40	32	28	30	47	38	40	44	41	47	37
Ogdensburg.	38	26	35	45	26	34	37	54	36	41	44	52	53	38
Potsdam.	42	26	30	42	33	23	34	46	38	37	42	49	56	49
Great Lakes.	48	31	47	52	38	32	39	55	39	40	42	48	55	38
Dunkirk.	46	34	50	46	34	31	46	55	36	37	41	48	50	34
Buffalo.	46	30	45	45	37	33	42	51	36	40	45	50	50	34
Eden Centre.	55	30	50	58	52	33	43	56	38	46	37	54	56	49
Brockport.	48	31	45	53	37	30	33	58	38	40		42	52	
Rochester.	54	30	48	52	36	28	36	59	40	41	44	49	58	35
Fort Niagara.	50	36	46	50	40	35	38	54	42	40	39	49	59	42
Hess Road Station.														
Baldwinsville.	42	30	46	49	36	32	39	52	40	38	46	49	54	40
Albion.														
Oswego.	47	24	42	52	32	28	35	54	36	38	40	47	54	34
Palermo.	41	30	39	53	36	30	34	52	39	38	42	48	58	40
Lyons.	46	30	47	53	38	32	34	56	42	42	44	47	60	40
Erie, Pennsylvania.	55	34	54	56	40	36	46	58	39	38	46	50	59	34
Central Lakes.	50	36	47	59	41	31	33	50	41	39	44	46	57	39
Fleming.	49	34	45	56	38	36	33	49	40	38	42	46	58	41
Geneva.	50	33	46	58	42	33	33	56	40	40	44	48	61	39
Watkins.	52	38	48	58	40	32	32	53	40	40	45	48	60	40
Romulus.	52	38	46	60	45	36	32	50	40	39	42	47	59	42
Hammondsport.	50	37	51	62	39	35	36	44	48	37	51	44	60	35
Ithaca.	50	36	44	60	41	34	32	50	40	38	42	46	60	42
Monthly means.	44.9	33.1	40.2	52.1	39.8	31.7	32.2	48.4	41.2	38.9	42.5	44.2	52.8	42.1

\* Means of the tri-daily observations. † Mean of the maximum and minimum of the ordinary self-registering thermometers. The means from the reports received too late to be used in computing averages.

## TEMPERATURES FOR APRIL, 1893 — (Concluded).

15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	Monthly mean.
80 30	34 34	32 32	37 37	36 36	36 36	42 42	44 44	43 43	39 39	41 41	33 32	40 40	47 47	42 42	44 44	37.6 37.6
29 29	32 32	40 35	38 32	36 32	37 35	45 42	42 40	48 39	39 34	41 36	36 32	43 40	46 44	45 40	46 42	39.4 37.1
30 30	31 30	42 41	40 40	38 36	38 35	44 45	40 42	40 39	40 39	44 42	40 36	39 46	47 48	44 46	48 46	39.5 40.3
28 30	34 31	40 40	38 40	36 42	38 32	46 50	42 52	42 53	40 44	38 50	38 37	44 42	46 47	44 54	45 50	39.6 40.5
28 29	32 32	42 37	36 39	36 35	35 36	40 44	42 38	44 41	41 38	36 38	37 32	48 48	47 45	45 42	50 42	40.1 38.2
32 32	37 40	42 40	40 40	38 40	39 42	46 44	39 38	40 36	39 36	40 39	48 46	47 46	47 46	44 42	45 46	42.3 41.4
31 38	36 38	40 40	38 42	36 36	40 49	42 48	37 35	38 41	40 40	41 41	44 38	44 49	42 48	42 42	48 46	41.0 44.0
30 34	36 42	46 40	40 44	38 40	38 39	48 46	39 42	41 44	42 42	40 42	41 48	46 48	49 48	45 44	46 43	42.4 43.6
31	38	45	40	39	38	50	42	41	44	38	42	50	50	47	50	42.4
30 30	34 37	42 36	37 38	37 36	36 34	46 50	40 40	38 41	38 39	40 41	38 38	48 45	45 47	42 45	42 46	39.9 40.7
33 34	34 39	44 42	40 44	38 40	38 46	48 46	41 39	42 40	44 40	42 38	41 51	40 52	45 48	50 40	46 42	42.5 44.0
33 34	36 38	44 44	40 41	38 40	38 37	48 46	41 43	41 44	42 44	42 42	41 42	46 48	51 53	48 48	49 52	43.1 42.1
35	36	45	41	36	38	50	40	40	43	39	48	45	53	50	42	43.5
32 32	35 38	45 43	42 38	39 35	40 38	48 46	41 40	42 43	45 35	43 48	38 42	48 45	50 48	50 45	50 47	43.8 42.2
31	37	44	41	38	36	48	40	41	44	40	42	46	50	47	50	43.0
34.2	36.3	40.0	40.5	38.7	37.2	45.8	43.0	41.6	42.0	42.8	39.5	43.3	48.0	46.9	45.8	41.6

Draper thermograph. Means for all stations not otherwise indicated are derived from the maximum daily observations are derived by the formula  $(7 \text{ a. m.} + 2 \text{ p. m.} + 9 \text{ p. m.}) \div 4$ .

## DAILY AND MONTHLY PRECIP

STATIONS.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<i>Western Plateau.</i>	0.12	T.	0.04	0.03	0 00	0.11	0.60	0.25	0.00	0.06	T.	0.10	0.08	0.41
Alfred Centre			.60				.29						.50	.40
Angelica	.23			T.		.10	.83	.33		.05		.14		.66
Bolivar	.14						.65	.67		.21		.16	.05	.54
Friendship	.24			T.		.07	.77	.26		.07		.20	.03	.58
Humphrey	.24				.20	.10	.66	.52		.05		.10		.79
Little Valley			.2		.30		.55	.35				.11		.21
Cherry Creek	.47			T.			.84	.30		T.		.06		.40
Elmira	.08			.08		.13	.58	.27		.27		.05		.42
Akron	.18		T.			.11	.81	.07				.11	T.	.16
Le Roy	.08					.20	.15	.06				.10		.18
Avon	T.		T.			.10	.2	T.		T.		.05		.45
Mt. Morris			T.			.08	.80	.17				.07		
Lockport		.05				.10	.65					.14		T.
Victor	.08	T.	T.	T.		.40	.23	.11				T.	.02	.60
Wedgewood	.07					.35	.58	.30		T.		.07	T.	.35
Addison	.01			.01		.07	.55	.35		.25		.03		.41
Atlanta	.11					.06	.63	T.			T.	.32	.02	.62
Pine City														
South Canisteo	.22		T.	T.		.20	.70	.67		.65		.15	.05	.50
Arcade	.39			T.		.20	.60	.27				.06		.52
Attica														
Castile												.07		.45
Varysburg							.62	.11				.10		
<i>Eastern Plateau</i>	0.06	T.	T.	0.06	T.	0.19	0.45	0.28	0.00	0.08	T.	0.01	0.12	0.37
Binghamton				.20		.10	.20	.53		.20	.06		.12	.36
Chemango Forks	.50					.45	.20	.25						.36
Oxford		T.	T.	.10		.40	.65	.54		T.		T.	.30	.36
Cortland	.16					.11	.62	.37						.28
Deposit														
South Kortright	.07			.19		.38	.46	.45		.08			.08	*
Brookfield	.02			.01	T.	.40	.20	.03				.02	.01	.10
Apulia														
Middletown	T.			T.		T.	.80	.10		.18			.30	*
Port Jervis							.73	.29		.10			.09	.50
Warwick														
Cooperstown	.08			.12		.25	.45	.25					.33	.10
New Lisbon	.05					.28	.50	.13					.16	.24
Quaker Street	.21			.30			.30	.15						.10
Perry City	.02	T.		.02		.40	.35	.21				.08	T.	.35
Newark Valley	.02		T.	.02		.16	.70	.16		.05			.07	.33
Waverly	.05		T.	.04		.07	.51	.41		.22		T.	.02	.45
Ellis	.01					.15	.24	.20				.02		.29
McLean														
Newfield Summit							*	†.80						*
Minnewaska										.50			.10	*
<i>Northern Plateau</i>	0.16	T.	0.02	0.02	0.02	0.04	0.48	0.24	0.00	0.00	0.00	T.	0.08	0.28
West Chazy	.02		.04				.02	.38				T.		
Ausable Forks														
Keene Valley														
Amersand	.08		T.	T.			.05	.12						.15
Hiawatha House														
Gloversville	.21		T.	.08		.06	.63	.09					.17	.29
Blue Mt. Lake														
Bisby Lodge														
Carthage	.42		.08				.20						.10	.25
Constableville	T.				.20		.40					T.	.10	.10
Lowville	.38		.02				.58	.77						.43
Number Four	.12		.08				.40	.49					.10	*
Turin	.46	T.	.05			.19	.77	.05				T.	.14	.43
Galway														
King's Station	.09			.12		.08	.60	.06					.08	.37

## TATION FOR APRIL, 1893 — (INCHES).

15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	Total.
0.50	T.	0.02	0.00	T.	0.62	0.46	0.11	0.06	T.	0.18	T.	0.04	T.	0.03	0.25	3.94
.35					.18	.10								.02	.14	2.33
.37	T.				.72	.28	.04	T.		.19		.02		.06	.35	4.37
.40					.59	.11	.02			.29				.10	.39	4.49
	T.				.38	.46	.18	.07		.25		.02		.02	.41	4.34
.15					1.35	.10	.13	.01		.15		.30		.10	.60	5.61
.30					1.87	.20	.35	.17		.30		.07		.10	.30	4.38
.48	T.	.03			.75	.56	.16	.18		.27		.14		.06	.41	5.08
.45		.08			.52	.47		T.		.20						3.55
.51	T.				.60	.63	T.	.06		.04	T.	.16			.23	3.77
1.30					.30	.60	.15	.12				.08			.60	3.82
	T.			T.	.40	.75	.16		.08	.04		T.				2.18
1.15					.22	.33	.14			.12				T.		3.06
.70					1.53	.47	T.							T.	.17	4.01
.50		.04			.47	.54	.13	T.		T.			T.	T.	.20	3.27
.34		.10			.48	.56	.02			.14					.19	3.55
.28		.05			.51	.58	.02	T.		.21				.05	.12	3.50
.52					.40	.58	.14	.16	T.	.13		.01			T.	3.68
.40		.05			1.14	.19	.06	T.		.24		T.		.05	.57	5.84
.72		T.			.40	.63	.17	.01		.05		T.		T.	.45	4.47
.77					.46	.52	.14	.08		.10		T.		.02	.05	
.88					.40	.63	.15	.44		.12		.05			.12	3.62
0.37	0.00	0.07	0.01	0.00	0.63	0.28	0.09	0.04	0.01	0.04	T.	0.09	0.00	0.02	0.06	3.29
.34		.14			.54	.15	.22	T.		.15					.05	3.36
		.30			.62									.10		2.37
.76		.12			.70	.53	.19	T.				.12		T.	.08	4.89
.60		.05			.35	.25	.24	.09								3.12
†.56		T.			*	†.55	.14	.12	.10			.17			T.	3.35
.07		.01			.50	.25	.05	.02		.02						1.71
†.44		.06			1.80		.06	.06		T.		.35		.05		3.57
					1.05	.27				.05		.18		.05	.30	3.61
.50		.05			.70	.15		.05			.05			.08		2.96
.82		.02	.05		.93	.32	.20	.05		.08					.02	3.30
.50					.50	.40						.30				3.15
.52		.14			.42	.61	.04	.08		.13	T.			T.	.21	3.58
.42		.14			.50	.42	.22	.04		.14				.06	.02	3.49
.35		.02			.70	.27	T.	.04		.12				T.	.07	3.39
.42		.12	.04		.32	.31	.10	.08		.06					.18	2.55
†.55					*	†.90						.35				4.20
0.60	0.02	T.	0.02	0.00	0.29	0.28	0.17	0.23	T.	0.08	0.04	0.18	T.	T.	T.	3.36
1.45	.05	T.	.11		T.	.13	.11	.08		.04		.11	T.			2.57
.95	.10		T.			1.11	T.	.19		.22		T.				2.95
.70		T.	.05		.40	.33	.14	.05		.07		.27		.08		3.57
.89					.25	.08		.27	.19	.04						2.67
.40					.87	T.	.19					.35				2.69
.82					.28	.14	.28	.06		.01		.12				3.89
†.80					.24	*	†.26	1.33		.08		.06	.02			3.98
.67					.33	.08	.63	.05	.08	.06		.19		T.	T.	4.13
.60					.30	.30				.12	.30	.36				3.18

## DAILY AND MONTHLY PRECIPITA

STATIONS.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<i>Coast Region</i> .....	T.	T.	0.00	T.	0.00	T.	0.61	0.21	T.	0.05	0.01	T.	0.04	1.08
New York city .....	T.	T.	.....	T.	.....	T.	.97	.03	.02	.15	.01	T.	.06	.87
Willet's Point .....	.....	.....	.....	.....	.....	.....	.....	.86	.....	.....	.....	.....	.61	1.50
Brentwood .....	.....	.....	.....	.....	.....	T.	.56	.....	.....	.10	.....	.....	T.	.....
Setauket .....	T.	.....	.....	T.	.....	T.	.76	.63	.....	T.	.....	T.	T.	1.04
Bedford .....	T.	.....	.....	T.	.....	T.	.89	.16	.....	.01	.02	.....	.04	.72
<i>Hudson Valley</i> ....	T.	T.	T.	0.37	0.00	0.18	0.51	0.28	0.08	0.01	0.01	T.	0.04	0.07
Albany .....	T.	.....	T.	.16	.....	.20	.18	.06	.....	.....	.....	T.	.01	.15
Bethlehem Centre .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Lebanon Springs .....	T.	.....	.....	.16	.....	.39	.67	.50	.....	T.	.....	T.	.68	*
Honeymead Brook .....	T.	.....	.....	.01	.....	.20	.36	.42	.16	T.	.....	.....	.06	.31
Pawling .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Poughkeepsie .....	T.	.....	.....	T.	.....	.03	.53	.36	.....	.01	.....	.....	T.	T.
Wappinger's Falls .....	T.	.....	.....	.....	.....	.08	.52	.45	.....	T.	.06	.....	.07	.03
West Point .....	.....	T.	.....	.....	.....	T.	.68	.05	.07	.04	.....	.....	.08	T.
Boyd's Corners .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Carmel .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
S. East Reservoir .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Schoadack Depot .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Rondout .....	.....	.....	.....	.....	.....	*	*	†1.20	.....	.....	.....	.....	.....	*
Easton .....	.....	.....	.....	.25	.....	.....	.64	.....	.....	.....	.....	.....	.....	.....
<i>Mohawk Valley</i> ....	0.00	0.08	0.06	0.07	0.00	0.14	0.42	0.44	0.02	0.00	0.00	0.00	0.17	0.19
Rome .....	.....	.15	.....	.10	.....	.13	.....	.93	.04	.....	.....	.....	.21	.....
Utica .....	.....	.....	.12	.04	.....	.15	.85	.04	.....	.....	.....	.....	.18	.38
<i>Champlain Valley</i> ..	0.00	0.00	0.03	T.	0.00	0.00	?	?	0.00	0.00	0.00	0.00	0.10	0.00
Plattsburgh .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Plattsburgh Barr'ks .....	.....	.....	.03	T.	.....	.....	*	†.35	.....	.....	.....	.....	.....	.....
Fort Henry .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Glens Falls .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Whitehall .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
<i>St. Lawrence Val.</i> ..	0.26	0.00	0.03	0.03	0.00	0.00	0.15	0.20	0.00	0.00	0.00	0.01	0.01	0.04
Malone .....	.33	.....	.10	.06	.....	.....	.06	.40	.....	.....	.....	.....	.....	.....
Madison Barracks .....	.24	.....	.03	.02	.....	.....	.24	.14	.....	.....	.....	.06	.....	.....
Watertown .....	?	.....	.03	.03	.....	.....	.19	?	.....	.....	.....	.....	.01	.24
Canton .....	.18	.....	T.	T.	.....	.....	.17	.31	.....	.....	.....	T.	.....	.....
De Kalb Junction .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
North Hammond .....	.42	.....	.06	.....	.....	.....	.22	.13	.....	.....	.....	.....	.05	.....
Ogdensburg .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Potsdam .....	.42	.....	.....	.10	.....	.....	.18	.....	.....	.....	.....	T.	.....	.....
<i>Great Lakes</i> .....	0.21	T.	0.02	T.	0.04	0.08	0.63	0.09	0.00	0.00	0.00	0.12	0.02	0.27
Dunkirk .....	.22	.....	.02	.....	.....	.....	.06	.47	.17	.....	.....	.07	.....	.29
Buffalo .....	.12	T.	.01	T.	.....	.....	.10	.74	.21	.....	.....	.10	T.	.15
Eden Centre .....	.60	.....	.....	T.	.....	.....	.....	1.35	.35	.....	.....	.35	.....	.65
Adams Centre .....	*	†.51	.07	.04	.....	.....	.15	.....	.....	.....	.....	.02	.10	.10
Brockport .....	.06	.....	T.	T.	.....	.....	.09	.69	.08	.....	.....	.11	.....	*
Rochester .....	.02	T.	T.	T.	T.	.....	.09	1.00	T.	.04	.....	.04	.04	.22
Fort Niagara .....	.....	.....	.....	.....	.....	.....	.98	.06	.....	.....	.....	.04	.....	.....
Hess Road Station .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Baldwinsville .....	.34	.....	.04	.....	.13	.....	.87	T.	.....	.....	.....	.19	T.	.64
Albion .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Lyndonville .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Demster .....	.40	.....	.07	.....	.....	.16	.54	.....	.....	.....	.....	.18	.....	.26
Oswego .....	.35	T.	.03	.01	.01	.15	.57	T.	.....	.....	.....	.16	.04	.31
Palermo .....	.08	.....	T.	.....	.35	.....	.55	T.	.....	.....	.....	.20	.03	.18
Phoenix .....	.23	.....	.06	.....	.....	.15	.80	.....	.....	.....	.....	.....	.06	.48
Lyons .....	.04	.....	T.	.....	.....	.25	.06	.08	.....	.....	.....	.12	.....	T.
Erie, Pennsylvania .....	.28	.....	.....	.01	.....	.....	.10	.30	.....	.....	.....	.11	.....	.28
<i>Central Lakes</i> ....	0.08	T.	T.	0.01	0.03	0.14	0.59	0.15	0.00	0.00	0.00	0.08	0.02	0.40
Fleming .....	.....	.....	.....	.....	.....	.10	.20	.05	.....	.....	.....	.....	.....	.33
Geneva .....	.....	T.	.....	.....	.09	.....	.90	.40	.....	.....	.....	.....	.....	.40
Watkins .....	.10	.....	.....	.....	.....	.80	.55	T.	.....	.....	.....	.25	.....	.60

TION FOR APRIL, 1893 — (INCHES) — (Continued).

15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	Total.
0.43	0.00	0.00	0.00	0.06	1.25	0.62	T.	T.	0.00	0.17	0.03	0.52	T.	0.08	0.08	4.83
.81					1.74	.67	.02	T.		.19		.78		.03	.01	6.36
.20				.30	*	+1.15				.17	.15	.60			.40	5.33
+1.00					*	+1.50				.20		.10	T.	T.		3.40
.70					1.11	.48	T.			.15		.71		.05	T.	4.95
					.91	.74	T.			.15		.41		.07		4.12
0.43	0.00	T.	0.06	0.04	0.84	0.14	0.02	0.03	0.00	0.04	0.03	0.26	T.	T.	0.02	3.32
.49			.01		.48	.10	T.	T.		.68		.15	.01		.02	2.10
+5.56		T.			*	+1.85	.03	.14		.10		.20				4.68
.31					.74	.14	T.			.03		.19		T.	T.	2.93
.55					.93	.2	T.	.03				.26		T.		2.98
.49					.80	.1	.16	.06		.07		.32		.03	.11	3.43
.32		T.			1.11	.26	T.			.05	.25	.25		T.		3.16
+7.80					1.80							.20			T.	4.20
.82				.51	.36							.53				3.11
0.66	0.09	0.00	0.04	0.00	0.31	0.31	0.34	0.12	0.00	0.00	0.00	0.22	0.00	T.	0.00	3.72
.19			.07			.62	.33	.16				.24				3.97
.52					.62	T.	.35	.08				.20		T.		3.48
1.30	0.00	0.00	0.00	0.00	0.60	0.20	T.	0.08	0.00	0.10	0.00	0.05	0.00	0.00	0.00	2.11
.130						.20	T.	.08		.10		.05				2.11
0.80	0.02	T.	0.00	0.00	0.40	0.42	0.13	0.07	0.01	0.12	0.00	0.25	0.00	0.00	0.10	3.04
.90	.15					.47	.04	.12		.41		.20				3.44
+7.79					1.04	.02	.41	.15	.06			.11			.67	3.68
.83		T.			.37	.16	.3	.20		.05		.01				
.76					.42	.10				.20		.15				2.29
.60					.24	1.35	.01					.44				3.52
.50					*	* +1.25				.15						1.95
1.30					*	+0.60						.57				3.07
0.60	0.00	0.01	0.00	T.	0.67	0.32	0.13	0.09	0.01	0.09	0.03	0.11	0.01	0.04	0.13	3.77
.52					.57	.39	.05	.03		.26		.10	.04	.37		3.70
.78		T.			1.27	.52	.03	.12		.09		.10		.03	.14	4.49
.80		T.			1.40	T.	.60	.20		.30		.32		T.		6.92
.12						.55	.35	.10	.09		.06					2.41
+7.79				*	.90	.74	+1.59	.14	.04		.06	.07	.05		.14	3.62
.60		T.				.14	.04		.04		.06			T.	.08	3.97
.41					1.35	.03	.07			.14	.14				.48	3.70
.40		.04			.73	.030	.11	.07	.04		.14				.34	4.38
.53					.38	.40	.30	.17				.20		.05		3.63
.27		.02			.25	.58	.12	.09		.03		.15		T.	.03	3.17
1.00		T.			.60	.17	T.	.22				.28				3.66
.90					.35	.25	.10					.06				3.79
.70						.30	.12	T.		T.						1.07
.70		.02		.04	.33	.20	.05	.07		.36	.04	.14		.04	.60	3.07
0.40	0.00	0.04	0.00	0.00	0.62	0.43	0.03	0.01	0.00	0.04	0.00	0.00	0.00	T.	0.11	3.27
.40					1.00	.45	.12	T.		T.						2.62
.66					.96	.14	T.								.36	3.94
T.		.06			.50	.55	.02			.03						2.96



## REPORT OF THE DIRECTOR OF THE

## DAILY AND MONTHLY PRECIPITA

STATIONS.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<i>Cen. Lakes—(Con.)</i>														
Romulus .....	.08	T.			.07		.57	.11				.09		.54
Hammondsport .....														.30
Ithaca .....	.01	T.	T.	.05		.29	.74	.22				.04	.10	.35
Penn Yan .....														
Average.....	0.08	0.01	0.02	0.03	0.01	0.08	0.49	0.24	T.	0.02	T.	0.03	0.06	0.29

\* Amount included in next measurement.

† Not used in computing the averages.

‡ Record

TION FOR APRIL, 1893 — (INCHES) — (*Concluded*).

15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	Total.
.52	....	.03	....	....	.52	.46	T.	....	....	.08	....	....	....	....	....	3.02
.40	....	....	....	....	.30	....	....	....	....	....	....	....	....	....	....	....
.45	....	.15	....	....	.46	.54	.03	.06	....	.10	....	....	....	T.	.20	3.79
....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
0.63	0.01	0.01	0.01	0.01	0.56	0.35	0.10	0.07	T.	0.08	0.01	0.17	T.	0.01	0.08	3.46

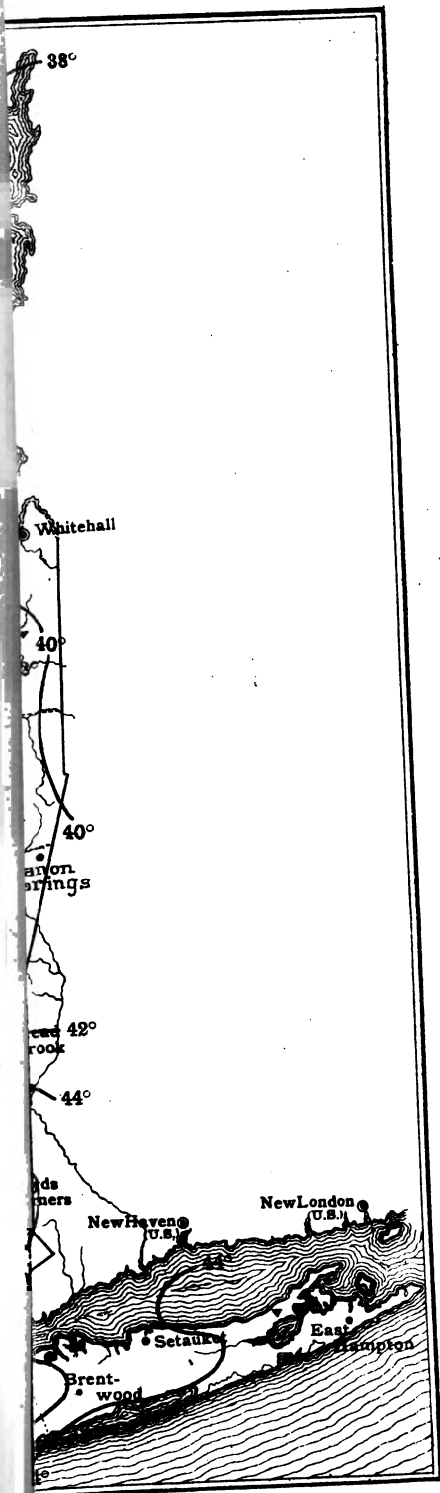
for the month incomplete.

| Reports too late to be used in computing the averages.

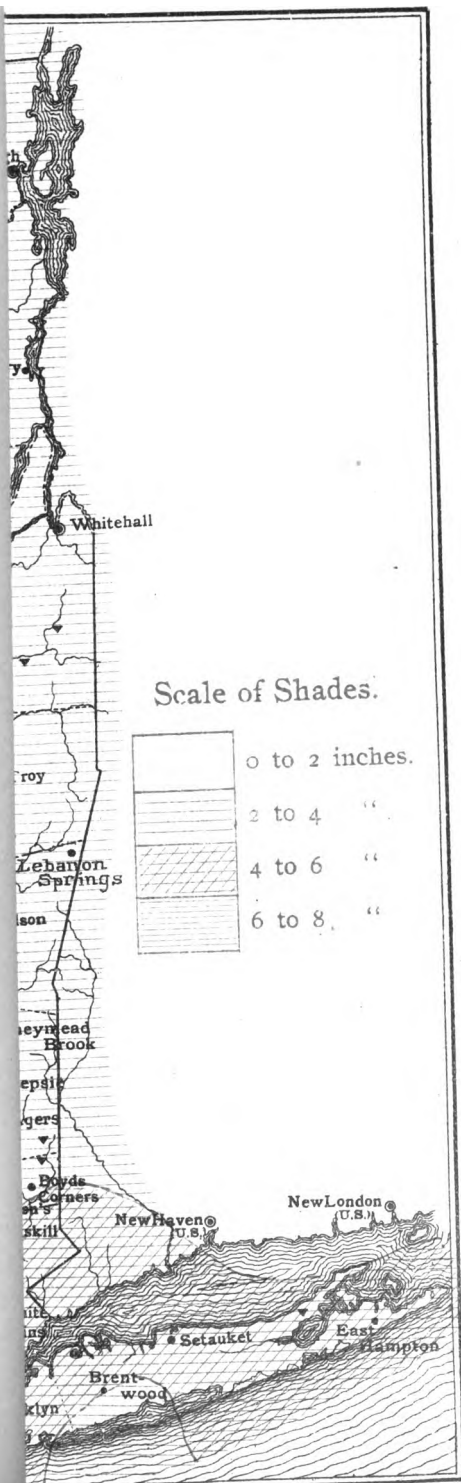
## TEMPERATURE AND RAIN

STATION.	County.	TEMPERATURE — (DEGREES FAHR.).									
		Normal for the month of April.	Length of record, years.	Record begins.	Record ends.	Mean for April 1898.	Departure from the normal.	EXTREMES OF MONTHLY MEAN TEMPERATURE FOR APRIL.			
								Highest.	Year.	Lowest.	Year.
<i>Western Plateau</i> .....		42.9				43.8	+0.4				
Angelica*	Allegany	41.6	10	1851	1893	42.1	+0.5	45.9	1854	35.9	1887
Humphrey	Cattaraugus	42.6	11	1883	1893	41.1	-1.5	46.0	1891	37.7	1884
Elmira*	Chemung	44.5	18	1852	1893	46.6	+2.1				
<i>Eastern Plateau</i> .....		42.6				41.9	-0.7				
Cooperstown	Otsego	40.8	40	1854	1893	39.1	-1.7	51.6	1878	33.6	1874
Waverly	Tioga	44.4	12	1882	1893	44.7	+0.3	48.5	1886	42.0	1885
<i>Northern Plateau</i> .....		37.9				38.9	+0.7				
Keene Valley*	Essex	37.0	7	1870	1891						
Lowville	Lewis	38.2	27	1827	1893	38.9	+0.7				
<i>Coast Region</i> .....		47.2				46.8	-0.4				
New York city	New York	47.6	23	1871	1893	48.0	+0.4	53.6	1871	41.3	1874
Setauket	Suffolk	46.9	8	1886	1893	45.7	-1.2	49.0	1891	44.7	1888
<i>Hudson Valley</i> .....		47.7				45.2	-2.5				
Albany	Albany	45.8	23	1871	1893	44.0	-1.8	51.5	1878	36.6	1874
Honeymead Brook	Dutchess	45.6	10	1864	1893	43.8	-1.8	50.5	1886	40.4	1887
Poughkeepsie*		49.3	22	1827	1893	46.4	-3.1				
West Point	Orange	48.7	61	1824	1893	47.7	-1.0	54.5	1838	39.5	1874
Rondout*	Ulster	49.1	23	1828	1893	44.2	-4.9	56.5	1830	43.8	1838
<i>Mohawk Valley</i> .....		44.3				41.2	-3.1				
Utica*	Oneida	44.3	33	1826	1893	41.2	-3.1	52.4	1844	37.6	1838
<i>Champlain Valley</i> .....		41.5				37.6	-3.9				
Plattsburgh Barracks	Clinton	41.5	35	1839	1893	37.6	-3.9	48.2	1844	35.6	1841
<i>St. Lawrence Valley</i> .....		42.5				39.6	-2.9				
Madison Barracks	Jefferson	43.5	31	1823	1893	39.6	-3.7	54.0	1830	34.1	1874
Canton*	St. Lawrence	42.2	31	1862	1893	39.6	-2.6	51.6	1886	33.7	1868
North Hammond	"	41.5	15	1866	1893	40.5	-0.7	48.8	1871	33.3	1874
Potsdam*	"	42.8	25	1828	1893	38.2	-4.6	52.2	1844	37.0	1841
<i>Great Lakes</i> .....		42.7				42.1	-0.6				
Buffalo	Erie	41.6	23	1871	1893	41.0	-0.6	50.0	1878	34.5	1874
Rochester	Monroe	43.3	23	1871	1893	42.4	-0.9	52.5	1878	35.5	1874
Fort Niagara	Niagara	43.5	26	1819	1893	43.6	+0.1				
Batavia	Onondaga	42.4	19	1849	1893	42.4	0.0				
Oswego	Oswego	41.9	23	1871	1893	39.9	-2.0	52.4	1878	35.4	1886
Palermo	"	41.4	41	1854	1893	40.7	-0.7	50.0	1878	32.4	1874
Lyons	Wayne	43.7	7	1860	1893	42.8	-0.9				
Erie, Pennsylvania	Erie	44.0	20	1874	1893	44.0	0.0	54.0	1878	37.0	1874
<i>Central Lakes</i> .....		43.8				43.6	-0.2				
Geneva*	Ontario	43.7	16	1854	1893	44.2	+0.5				
Ithaca	Tompkins	43.9	15	1879	1893	43.0	-0.9	49.4	1886	41.3	1888
Average departure....							-1.6				

\* Location of the instruments has been changed



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THE NEW YORK STATE ARCHIVES  
ALBANY, N. Y.

## FALL STATISTICS FOR APRIL.

STATION.	County.	RAINFALL (INCHES).									
		Average for the month of April	Length of record, years.	Record begins.	Record ends.	Total for April, 1893.	Departure from the average.	EXTREMES OF MONTHLY PRECIPITATION FOR FEBRUARY.			
								GREATEST.		LEAST.	
								Amount.	Year.	Amount.	Year.
<i>Western Plateau</i> .....		3.27	..	..	..	4.51	+1.24	..	..	..	..
Angelica.....	Allegany.....	2.84	8	1871	1893	4.37	+1.53	4.40	1857	0.90	1872
Humphrey.....	Cattaraugus.....	3.45	11	1883	1893	5.61	+2.16	5.61	1893	1.48	1892
Elmira.....	Chemung.....	3.53	17	1852	1893	3.55	+0.02	..	..	..	..
<i>Eastern Plateau</i> .....		2.44	..	..	..	3.32	-0.88	..	..	..	..
Cooperstown.....	Otsego.....	2.66	39	1854	1893	2.96	-0.30	7.12	1854	0.92	1863
Port Jervis.....	Orange.....	2.68	10	1880	1893	3.61	-0.93	4.25	1880	1.12	1881
Waverly.....	Tioga.....	1.99	12	1882	1893	3.39	+1.40	3.39	1893	0.87	1892
<i>Northern Plateau</i> .....		1.28	..	..	..	3.89	+1.80	..	..	..	..
Keene Valley.....	Essex.....	1.76	7	1879	1891	..	..	..	..	..	..
Lowville.....	Lewis.....	2.00	25	1827	1893	3.89	+1.80	4.57	1840	0.35	1830
<i>Coast Region</i> .....		2.37	..	..	..	3.77	+1.40	..	..	..	..
New York city.....	New York.....	3.61	23	1871	1893	6.36	+2.75	7.02	1874	1.00	1881
Satucket.....	Suffolk.....	3.50	8	1885	1893	4.95	+1.45	4.95	1893	1.82	1892
<i>Hudson Valley</i> .....		3.09	..	..	..	3.10	+0.12	..	..	..	..
Albany.....	Albany.....	2.35	20	1874	1893	2.10	-0.25	4.97	1874	0.56	1892
Honeynead Brook.....	Dutchess.....	2.22	10	1884	1893	2.93	+0.71	3.58	1891	0.71	1892
West Point.....	Orange.....	4.84	45	1840	1893	3.16	-1.68	10.53	1854	0.50	1844
Boyd's Corners.....	Putnam.....	3.39	9	1866	1892	..	..	5.45	1870	1.08	1872
Rondout.....	Ulster.....	2.48	23	1829	1893	4.20	+1.72	4.98	1829	0.20	1848
<i>Mohawk Valley</i> .....		2.78	..	..	..	3.48	+0.70	..	..	..	..
Utica.....	Oneida.....	2.78	36	1836	1893	3.48	+0.70	6.69	1842	0.90	1846
<i>Champlain Valley</i> .....		1.88	..	..	..	2.11	+0.23	..	..	..	..
Plattburgh Barracks.....	Clinton.....	1.88	32	1840	1893	2.11	+0.23	5.25	1840	0.30	1881
<i>St. Lawrence Valley</i> .....		2.10	..	..	..	3.50	+1.40	..	..	..	..
Malone.....	Franklin.....	2.60	14	1830	1893	3.44	+0.84	..	..	..	..
Madison Barracks.....	Jefferson.....	1.79	31	1840	1893	3.98	+2.19	3.98	1853	0.42	1882
North Hammond.....	St. Lawrence.....	2.13	16	1866	1893	3.52	+1.39	5.60	1867	0.65	1870
Potsdam.....	St. Lawrence.....	1.89	25	1828	1893	3.07	+1.18	3.91	1840	0.20	1830
<i>Great Lakes</i> .....		2.39	..	..	..	3.78	+1.48	..	..	..	..
Buffalo.....	Erie.....	2.46	23	1871	1893	4.49	+2.03	4.71	1878	0.76	1881
Rochester.....	Monroe.....	2.56	23	1871	1893	3.97	+1.41	4.99	1874	0.94	1884
Fort Niagara.....	Niagara.....	1.91	35	1841	1893	3.70	+1.79	4.20	1842	0.21	1837
Oswego.....	Oswego.....	2.08	23	1871	1893	3.17	+1.09	3.66	1886	0.85	1879
Palermo.....	Oswego.....	2.22	41	1854	1893	3.66	+1.44	7.00	1859	0.80	1885
Erie, Pennsylvania.....	Erie.....	2.57	20	1874	1893	3.67	+1.10	3.86	1881	1.14	1892
<i>Central Lakes</i> .....		2.50	..	..	..	3.86	+1.36	..	..	..	..
Geneva.....	Ontario.....	2.91	21	1850	1893	3.94	+1.03	5.20	1854	1.28	1892
Ithaca.....	Tompkins.....	2.10	15	1879	1893	3.79	+1.69	3.79	1893	1.03	1881
Average departure.....		..	..	..	..	..	+1.15	..	..	..	..

during the period covered by the record.



## Meteorological Summary for May, 1893.

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The average atmospheric pressure (reduced to sea-level and 32 degrees Fahr.) for the State of New York during May was 29.87 inches. The highest barometer was 30.35 inches at Rochester, on the tenth; and the lowest was 29.13 inches at New York city, on the fourth. The distribution of pressure was similar to that of April, increasing from the western portion of the State toward the Atlantic coast. The mean barometer for the month was unusually low; the average of the mean values at six stations of the National Bureau being 0.10 inches below the normal. The greatest deficiency was 0.13 inches at Oswego, and the least 0.08 inches at New York city.

The mean temperature of the State, as derived from the records of sixty-nine stations, was 55.0 degrees; the highest general daily mean being 69.7 degrees on the twenty-second, and the lowest 44.8 degrees on the fourth. The highest local monthly mean was 60.2 degrees at West Point and at Wappinger's Falls, Dutchess county; and the lowest was 50.7 degrees at Ampersand (on Saranac lake). The maximum temperature reported during the month was 93 degrees at Rome on the twelfth and twenty-fourth, and at Madison Barracks on the twenty-third; while the minimum was 25 degrees at Utica on the twentieth. The mean monthly range of temperature was 52 degrees; the greatest range being 60 degrees at South Canisteo and South Kortright; and the least 41 degrees at Arkwright, Chautauqua county. The mean daily range was 20 degrees; the greatest daily range being 50 degrees at Utica on

the twentieth, and the least 1 degree at Madison Barracks and Fort Niagara on the fourth. The mean temperatures of the various sections of the State were as follows: The Western plateau, 54.4 degrees; the Eastern plateau, 54.7 degrees; the Northern plateau, 51.8 degrees; the Coast region, 57.2 degrees; the Hudson valley, 57.8 degrees; the Mohawk valley, 57.2 degrees; the Champlain valley, 53.4 degrees; the St. Lawrence valley, 54.4 degrees; the Great Lake region, 54.4 degrees; and the Central Lake region, 56.0 degrees. The average of the mean temperatures at twenty-nine stations possessing records for previous years was 0.6 degrees below the normal value. Eight stations only reported temperatures slightly above the normal.

The mean relative humidity was 74 per cent. The mean dew point was 46 degrees.

The average precipitation, as derived from the records of ninety stations, was 5.74 inches of rain and melted snow. The general maximum rainfall occurred over the southeastern highlands of the State, exceeding eight inches; while the minimum fell below four inches in the northeastern section. The greatest local monthly precipitation was 8.44 inches at Port Jervis, and the least was 3.12 inches at West Chazy. Heavy general rains occurred as follows: On the first in all regions, with an average for the State of 0.58 inches. On the fourth throughout the State, exceeding two inches at nearly all stations in the Coast, Hudson valley, Eastern plateau and Central Lake regions, and elsewhere ranging from one to two inches. On the sixteenth the amounts exceeded one inch at nearly all stations of the Western plateau and the Great and Central Lake regions, with an average for the State of 0.65 inch. A light snowfall was reported from only four stations located in the colder parts of the northern and central highlands. The average precipitation

at thirty stations possessing records for previous years was 2.94 inches above the normal amount; all stations reporting an excess. At Port Jervis, Waverly, Setauket, Honeymead, Brook and Potsdam the rainfall was the heaviest on record during the several periods of observation.

The average number of days on which the precipitation amounted to 0.01 inch or more was 12.7. The number was deficient, as compared with the general average, in the Coast, Central Lake and Champlain Valley regions. The average number of clear days was 10.6; of partly cloudy days, 8.0; and of cloudy days, 12.4. The average cloudiness for the State was 53 per cent (overcast=100 per cent). The cloudiness was much greater in the northern and western portions of the State than elsewhere.

The prevailing direction of the wind was from the west. The average total wind travel at six stations of the National Bureau and at Ithaca was 6,638 miles; being in excess of the usual values in both the Coast and Great Lake regions. The maximum velocity recorded was fifty-six miles per hour at Buffalo on the twenty-third.

Thunderstorms were reported on the first and second from a few stations of the southeastern counties, and on both dates at Humphrey; on the fourth at Port Jervis and Waverly; on the sixth at Port Jervis; on the twelfth at eight stations in the western section; and on the thirteenth over the same territory, and also at Gloversville; on the fifteenth at seven stations in the southern counties and east of Lake Ontario; on the sixteenth at Port Jervis and Victor; on the twentieth at six stations of the western counties; on the twenty-third at twenty stations in all parts of the State; on the twenty-fourth at Wappinger's Falls; on the twenty-fifth at Utica and Canton; on the twenty-sixth at

Port Jervis; on the twenty-seventh at three stations in central New York; and on the thirtieth and thirty-first thunderstorms occurred generally over the State.

Hail fell at a few stations on the twenty-third and thirty-first.

Light frosts occurred on the fourth, seventh, eighth, ninth, nineteenth, and thereafter on every day excepting the twenty-seventh.

Solar halos were observed on the second, eighth and twenty-fifth; and lunar halos on the twenty-first, twenty-second, twenty-fifth, twenty-eighth and twenty-ninth.

The data for this summary have been obtained from the records of fifty-eight voluntary observers, six stations of the National Bureau, five military posts and twenty special rainfall observers.

During May the weather of New York was influenced by three areas of low pressure; the latter number being in excess of the average storm frequency in the vicinity of New York during May in previous years. The first disturbance of the month died out north of the Great Lakes on the second; three depressions passed over some portion of the State on the fourth, fourteenth and seventeenth; and on the twentieth, twenty-third, twenty-fifth and thirtieth, storm areas skirted the western and northern borders of New York. Finally, on the thirty-first, the ninth depression had passed eastward to the central States, its system of winds and rain covering western New York. The cyclone of the fourth was a coast storm of great energy, giving a very heavy rainfall with the maximum wind velocities of the month in the southeastern portion of the State. The storm of the twenty-third-twenty-fourth, which moved over the Great Lakes and down the St. Lawrence valley, was also notably severe, being accompanied by gales on the Lower Lakes and in the western

counties. The anticyclones were in all cases large areas of rather irregular form and of only moderate intensity; and being much less numerous than usual, their influence upon the weather conditions was subordinate to that of the cyclonic systems. The barometric pressure was abnormally low over the western portion of the State, which region lay closest to the average storm track; while in eastern New York and along the coast the mean pressure approached the normal value.

The month, as a whole, was cooler than usual, the temperature rising above the normal only during two periods, covering respectively the dates from the ninth to the thirteenth, and from the twentieth to the twenty-third. On the fourth a light fall of snow was reported from the northern highlands, and frosts were of frequent occurrence, although not severe enough to damage vegetation in the majority of cases.

Fair weather obtained generally from the sixth to the twelfth and during the greater part of the period between the nineteenth and the twenty-first. The heaviest rains in May occurred on the fourth in eastern New York, and on the sixteenth and seventeenth in the central and western sections. The total rainfall was considerably in excess of the normal amount, as was to be expected from the frequency of cyclonic disturbances, and the character of the general distribution of pressure, as already described.

Cool, cloudy weather and heavy rains during the first week of May delayed the growth of vegetation and all farming operations; but the higher temperature which obtained from the ninth to the thirteenth was very favorable, grass and grains being generally reported to be in good condition. Potato planting advanced rapidly, and in the warmer portion of the southern counties early potatoes were already breaking through the

ground. The second period of cool, damp weather, occurring about the middle of the month, was rather detrimental, and very heavy rains in the southwestern counties caused a considerable damage by washing the soil. Abnormally high temperatures on the twenty-first, twenty-second and twenty-third were of great benefit to all crops, but their rapid advance was again checked by the cool weather with which the month closed; and the season was then generally stated to be rather backward, both as regards the condition of vegetation and farm work.

## METEOROLOGICAL DATA

LOCATION OF STATIONS.		BAROMETER.							HUMIDITY.		TEMP.			
STATIONS.	County.	Elevation, feet.	Mean.	Highest.	Date.	Lowest.	Date.	Month y range.	Mean relative.	Dew point (degrees).	Mean of tri-daily obser- vation.	Mean of maximum and minimum.	Highest.	
<i>Western Plateau</i> .....														
Alfred Centre	Allegany	1824										74.4	89	
Angelica	"	1340										53.9	85	
Friendship	"	1550							72	44	52.4	53.9	84	
Humphrey	Cattaraugus	1950							78	47	54.0	53.5	81	
<i>Arkwright</i> .....														
Elmira	Chautauqua	1260										51.7	78	
LeRoy	Chemung	883									59.4	56.4		
Mt. Morris	Genesee	888										56.6	88	
	Livingston	625							84	50		54.8	88	
<i>Lockport</i> .....														
Victor	Niagara	616										54.7	84	
Wedgewood	Ontario	650										55.4	88	
Addison	Schuyler	1350									53.5	55.6	87	
	Steuben	1000									55.9	55.9	87	
<i>South Canisteo</i> .....														
Arcade	Steuben	1480							68	44	54.0	54.8	89	
Varysburg	Wyoming	1557									52.1	51.7	83	
Italy Hill	Yates	1650										53.8	85	
<i>Eastern Plateau</i> .....														
Binghamton	Broome	870							75	44	55.1	54.7	89	
Oxford	Chenango	1250										54.9	89	
Cortland	Cortland	1120										54.7	87	
												53.9	83	
<i>South Kortright</i> .....														
Brookfield	Delaware	1700										53.8	88	
Middletown	Madison	1350							79	46	52.4	52.6	86	
Port Jervis	Orange	660							73	48		55.0		
		470										57.7	86	
<i>Cooperstown</i> .....														
New Lisbon	Otsego	1300									52.8	52.7	88	
Quaker Street	"	1284									50.5	52.6	86	
Perry City	Schenectady	973												
	Schuyler	1088									54.1	54.7	86	
<i>Waverly</i> .....														
Newfield Summit	Tioga	825							78	49	56.8	56.4	87	
Minnewaska	Tompkins	2000										54.2	85	
	Ulster	1800									53.5	54.8	84	
<i>Northern Plateau</i> .....														
Lyon Mountain	Clinton	1917											51.8	90
Keene Valley	Essex	1015												
Ampersand	Franklin	1600							68	41	52.5	50.7	85	
<i>Gloversville</i> .....														
Bisby Lodge	Fulton	1950									54.2	54.0	90	
Constableville	Herkimer										50.7	51.0	88	
	Lewis	1246												
<i>Lowville</i> .....														
Number Four	Lewis	900										52.6	84	
Turin	"	1571							87	40	50.9	51.4	88	
	"	1240										51.4	82	
<i>Coast Region</i> .....														
New York City	New York	185										57.2	86	
Willet's Point	Queens											59.0	86	
Brentwood	"											57.0	85	
Setauket	Suffolk	75									56.4	55.9	86	
	"	40							88	54	56.4	56.8	88	
<i>Hudson Valley</i> .....														
Albany	Albany	85	29.87	80.29	9	29.27	17	1.02	73	48		57.8	88	
Lebanon Springs	Columbia	880										54.2	88	
Honeynead Brook	Dutchess	450							72	48	56.6	56.9	87	

## STATE METEOROLOGICAL BUREAU.

115

FOR MAY, 1893.

TEMPERATURE — (IN DEGREES FAHR.)										SKY.		PRECIPITATION — (INCHES.)						WIND.				
Date.	Lowest.	Date.	Monthly range.		Mean daily range.		Greatest daily range.		Date.	Least daily range.	Date.	Number of clear days.	No. of partly cloudy days.	Number of cloudy days.	Number of days on which 0.01 or more inches fell.	Total.	Greatest rainfall.	Duration †		Date.	Total snow fall.	Prevailing direction.
12	28	8	53	23	47	r	2	4	10.1	8.2	12.7	14.8	6.40	2.75	H.	3	80	31	.....	N. W.		
23	32	8	53	21	47	23	3	18	10	8	18	11	5.69	2.30	.....	.....	.....	3-4	.....	N. W.		
23	32	8	57	24	44	s	6	18	7	12	13	30	5.65	1.23	.....	.....	.....	4	.....	W.		
23	32	8	55	27	47	20	3	17	11	9	11	15	5.70	1.27	.....	.....	.....	4	.....	W.		
a	34	8	47	22	41	20	3	17	8	5	18	17	5.42	0.85	6	30	12	.....	S. W.			
a	36	18	41	15	36	23	5	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	S.		
23	38	26	50	20	33	22	2	4	9	8	14	15	6.13	1.40	.....	.....	.....	1	.....	S. W.		
23	31	8	55	27	45	20	10	4	5	9	17	14	5.68	1.10	.....	.....	.....	4	.....	W.		
23	35	26	49	20	37	22	7	4	10	14	7	14	7.18	1.24	.....	.....	.....	4	.....	S. W.		
23	36	19	52	24	39	11	8	16	11	10	10	14	6.19	1.42	.....	.....	.....	4	.....	W.		
23	35	f	52	24	42	20	4	18	10	11	10	13	5.37	1.85	24	0	4	.....	S. W.			
23	32	8	55	24	46	20	6	x	14	9	8	16	7.87	2.75	3	80	31	.....	W.			
12	29	8	60	25	47	20	7	bc	12	3	16	13	5.25	1.87	.....	.....	.....	16	.....	N. W.		
a	29	19	53	24	42	s	7	14	11	9	11	16	7.28	1.12	.....	.....	.....	17	0.5	.....		
23	32	8	53	23	43	20	6	16	.....	.....	.....	16	5.52	1.05	.....	.....	.....	16	.....	.....		
23	26	8	55	22	47	20	3	18	10.9	7.3	12.8	14.5	6.40	2.66	15	0	4	.....	S. E.			
23	30	8	59	22	44	25	5	18	12	6	13	16	5.16	1.85	.....	.....	.....	4	.....	W.		
23	31	8	56	24	40	11	6	16	13	7	11	15	6.23	1.90	.....	.....	.....	4	.....	.....		
23	32	6	51	17	35	20	6	y	.....	.....	.....	10	6.29	2.34	.....	.....	.....	4	.....	.....		
23	26	8	60	27	47	20	10	18	.....	.....	.....	13	5.81	1.77	.....	.....	.....	4	.....	W.		
23	30	g	56	21	43	20	8	aa	13	5	13	15	5.87	2.15	24	0	4	.....	N. W.			
23	34	8	52	22	42	10	4	8	13	4	14	15	8.44	2.66	15	0	4	.....	N. W.			
23	33	20	53	18	39	20	4	1	.....	.....	.....	17	6.74	2.00	.....	.....	.....	4	.....	S.		
23	28	8	58	24	44	t	7	4	9	8	14	18	4.90	1.66	.....	.....	.....	4	.....	S.		
23	31	8	55	24	45	20	4	18	9	9	13	14	5.37	2.12	.....	.....	.....	4	.....	S. W.		
23	30	8	57	23	46	20	6	16	7	12	12	17	7.54	2.68	24	00	3-4	.....	N. W.			
11	35	h	50	20	45	11	3	18	.....	.....	.....	10	8.03	2.00	23	00	16-17	.....	.....	.....		
23	36	i	48	19	32	20	5	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....		
23	30	i	53	21	42	u	3	6	9.0	8.2	13.8	13.0	5.64	2.25	.....	.....	.....	4	.....	.....		
23	30	i	55	22	42	20	3	6	10	8	13	11	8.46	1.12	.....	.....	.....	2	T.	.....		
23	32	8	58	23	42	v	7	17	9	7	15	16	6.06	1.62	.....	.....	.....	4	.....	W.		
23	31	8	52	20	37	11	7	16	10	8	13	7	4.87	1.95	13	0	4-5	.....	W.			
23	32	g	52	21	41	20	8	18	10	8	13	14	6.78	2.25	.....	.....	.....	4	.....	N. W.		
12	30	52	22	38	20	6	6	2	6	9	16	14	6.30	2.10	17	10	4-5	0.8	N. W.			
23	33	8	49	19	36	11	5	16	9	9	13	16	6.39	2.21	.....	.....	.....	4	.....	S. W.		
b	35	i	46	17	43	11	2	18	15.0	5.3	10.7	9.2	5.32	2.65	.....	.....	.....	4	.....	.....		
23	42	2	44	14	26	2	2	8	12	8	11	11	5.06	2.65	.....	.....	.....	4	.....	S. W.		
21	41	7	44	18	32	11	2	13	.....	.....	.....	9	4.55	2.05	.....	.....	.....	3	.....	N. W.		
21	35	i	51	21	43	11	3	8	21	1	9	8	5.85	1.50	7	0	3	.....	S. W.			
23	38	8	44	16	30	11	4	27	12	7	12	9	5.87	2.17	.....	.....	.....	4	.....	N. W.		
b	30	8	51	21	40	s	3	16	10.6	9.4	11.0	11.1	6.89	3.56	21	0	4	.....	.....	.....		
23	40	8	48	19	34	11	5	8	9	8	14	13	5.08	2.17	.....	.....	.....	4	.....	S.		
23	30	8	58	23	39	11	9	11	11	7	13	13	5.52	2.35	.....	.....	.....	4	.....	W.		
23	34	8	53	20	35	11	7	13	10	8	13	14	7.21	2.05	20	0	4	.....	.....	.....		



## METEOROLOGICAL DATA

LOCATION OF STATIONS.			BAROMETER.						HUMIDITY.		TEMP.		
STATIONS.	County.	Elevation, feet.	Mean	Highest.	Date.	Lowest.	Date.	Monthly range.	Mean relative.	Dew point (degrees).	Mean of tri-daily obser- vations.	Mean of maximum and minimum.	Highest.
<i>Hudson Val. — (Con.)</i>													
Poughkeepsie.....	Dutchess.....	180.....	.....	.....	.....	.....	.....	.....	.....	.....	58.2	58.2	87
Wappinger's Falls.....	Dutchess.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	60.2	58.8	88
West Point.....	Orange.....	167.....	.....	.....	.....	.....	.....	.....	.....	.....	60.2	58.8	88
Boyd's Corners.....	Putnam.....	546.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Carmel.....	.....	500.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Rondout.....	Ulster.....	151.....	.....	.....	.....	.....	.....	.....	.....	.....	56.6	54.4	84
<i>Mohawk Valley</i>													
Rome.....	Oneida.....	445.....	.....	.....	.....	.....	.....	.....	.....	.....	57.2	53.3	93
Utica.....	.....	537.....	.....	.....	.....	.....	.....	.....	.....	.....	59.6	53.3	93
											54.8	50.0	90
<i>Champlain Valley</i> ...													
Plattsburgh Barracks.....	Clinton.....	125.....	.....	.....	.....	.....	.....	.....	.....	.....	58.4	53.4	82
Port Henry.....	Essex.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	53.4	53.4	82
Glens Falls.....	Warren.....	340.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Whitehall.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
<i>St. Lawrence Valley</i>													
Malone.....	Franklin.....	810.....	.....	.....	.....	.....	.....	.....	.....	.....	54.4	53.4	88
Madison Barracks.....	Jefferson.....	268.....	.....	.....	.....	.....	.....	.....	.....	.....	53.7	52.6	85
Watertown.....	.....	486.....	.....	.....	.....	.....	.....	.....	.....	.....	54.7	54.7	93
											53.8	53.8	88
Canton.....	St. Lawrence.....	304.....	.....	.....	.....	.....	.....	.....	.....	.....	54.5	55.1	90
North Hammond.....	.....	300.....	.....	.....	.....	.....	.....	.....	.....	.....	54.7	56.0	88
Ogdensburg.....	.....	258.....	.....	.....	.....	.....	.....	.....	.....	.....	52.9	54.4	92
Potsdam.....	.....	300.....	.....	.....	.....	.....	.....	.....	.....	.....	53.8	53.8	88
<i>Great Lakes</i> .....													
Dunkirk.....	Chautauqua.....	590.....	.....	.....	.....	.....	.....	.....	.....	.....	54.4	54.4	90
Buffalo.....	Erie.....	690.....	29.86	30.30	10	29.21	17	1.09	73	44	51.6	52.7	80
Eden Centre.....	.....	690.....	.....	.....	.....	.....	.....	.....	.....	.....	54.1	54.1	87
Brockport.....	Monroe.....	521.....	.....	.....	.....	.....	.....	.....	.....	.....	57.3	57.3	87
Rochester.....	.....	621.....	29.88	30.35	10	29.23	17	1.12	75	47	56.0	56.0	90
Fort Niagara.....	Niagara.....	263.....	.....	.....	.....	.....	.....	.....	.....	.....	54.2	54.2	82
Hess Road Station.....	Niagara.....	330.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Baldwinsville.....	Onondaga.....	390.....	.....	.....	.....	.....	.....	.....	.....	.....	56.5	56.4	89
Albion.....	Orleans.....	521.....	.....	.....	.....	.....	.....	.....	.....	.....	56.7	56.1	87
Oswego.....	Oswego.....	304.....	29.86	30.30	10	29.22	17	1.08	72	43	53.4	53.4	88
Palermo.....	.....	460.....	.....	.....	.....	.....	.....	.....	.....	.....	53.4	53.4	89
Lyons.....	Wayne.....	407.....	.....	.....	.....	.....	.....	.....	.....	.....	56.7	56.1	87
Erie, Pa.....	Erie.....	681.....	29.89	30.31	10	29.34	16	0.97	73	45	54.0	54.0	85
<i>Central Lakes</i> .....													
Fleming.....	Cayuga.....	1000.....	.....	.....	.....	.....	.....	.....	.....	.....	56.4	55.9	86
Geneva.....	Ontario.....	459.....	.....	.....	.....	.....	.....	.....	.....	.....	56.2	56.6	92
Watkins.....	Schuyler.....	737.....	.....	.....	.....	.....	.....	.....	.....	.....	55.8	55.4	89
Romulus.....	Seneca.....	719.....	.....	.....	.....	.....	.....	.....	78	40	56.0	56.0	87
Hammondsport.....	Steuben.....	800.....	.....	.....	.....	.....	.....	.....	.....	.....	54.9	54.9	87
Ithaca.....	Tompkins.....	840.....	29.84	30.29	10	29.33	17	0.96	.....	.....	54.9	56.1	87
Mean.....			29.87	30.35	10	29.13	4	1.06	74	46	55.0	55.0	93

\* Mean of the tri-daily observations. † Mean of the maximum and minimum by the Draper tri-daily observations are derived by the formula (7 A. M. + 3 P. M. + 9 P. M.) ÷ 4. hours.

(a) 22, 23; (b) 21, 23; (c) 12, 24; (d) 12, 23; (e) 12, 23, 24; (f) 8, 9, 19; (g) 8, 20; (h) 4, 5, 6, 7, 19; (i) 11, 20; (u) 11, 20, 23, 25; (v) 11, 23, 25; (w) 14, 17; (x) 4, 18; (y) 4, 16, 17, 18; (aa) 5, 16, 18, 23;

FOR MAY, 1893 — (Concluded).

TEMPERATURE — (IN DEGREES FAHR.).						SKY.			PRECIPITATION — INCHES.						WIND.			
Date.	Lowest.	Date.	Monthly range.	Mean daily range.	Greatest daily range.	Date.	Least daily range.	Date.	Number of clear days.	No. of partly cloudy days.	Number of cloudy days.	Number of days on which 0.01 or more inches fell	Total.	Greatest rainfall.	Duration. †	Date.	Total snow fall.	Prevailing direction.
23 23	23	7	55	28	40	23	2	23	11	14	6	18	7.06	2.97	H. M.	4	...	S. E.
21 23	40	23	48	28	35	23	2	23	12	10	6	16	7.37	2.90	...	4	...	S. W.
...	...	...	...	...	...	...	...	...	...	...	...	11	8.24	3.56	21 0	4	...	...
23 23	36	8	48	18	33	20	2	16	...	...	...	9	7.78	...	...	...	...	...
23 23	25	20	32	20	50	20	2	5	...	...	...	16.0	7.16	2.10	...	4	...	...
23 23	35	1	58	17	38	26	2	5	...	...	...	14	6.47	1.71	...	4	...	...
23 23	20	20	65	23	50	20	7	4	...	...	...	18	7.84	2.10	...	4	...	W.
12 35	9	47	20	36	10	4	1	...	...	...	...	10.5	3.38	0.94	...	3	...	...
12 35	9	47	20	36	10	4	1	...	...	...	...	14	3.26	...	...	3	...	W.
...	...	...	...	...	...	...	...	...	...	...	...	7	3.50	0.94	...	3	...	...
23 23	32	2	55	20	49	23	1	4	8.0	9.0	14.0	18.7	5.68	2.00	...	4	...	...
23 23	32	5	53	18	33	23	5	2	8	8	15	16	4.05	0.76	...	18	1.0	W.
23 23	37	21	56	19	48	23	1	4	...	...	...	18	5.59	1.49	...	4	...	S.
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
23 23	36	2	54	21	37	23	8	4	6	10	15	18	7.21	...	...	...	...	...
23 23	19	4	56	23	42	26	10	ac	2	13	16	16	6.03	2.00	...	4	...	...
23 23	6	4	56	20	49	23	6	16	12	9	10	12	5.82	...	...	...	...	S. W.
23 23	35	5	55	22	36	23	9	2	12	5	14	12	5.86	1.66	...	5	...	S. W.
23 23	37	28	49	18	45	23	1	4	10.8	7.0	13.2	13.8	5.48	3.68	...	16	...	...
23 23	36	8	42	13	32	23	2	17	13	5	13	14	4.33	1.58	...	10	...	...
23 23	36	5	42	16	34	23	4	14	5	15	11	10	4.76	1.44	...	17	...	S. W.
23 23	32	28	55	21	32	1	10	10	10	2	19	12	8.18	1.80	...	18	...	S. W.
23 23	35	24	52	21	40	23	7	bb	16	7	8	17	4.99	1.14	...	16	...	S. W.
23 23	38	19	52	19	35	20	4	4	7	7	17	16	5.69	2.47	...	4	...	S. W.
23 23	40	9	43	15	32	23	1	4	...	...	...	10	5.18	...	...	...	...	W.
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
23 23	37	18	52	20	45	23	8	4	15	8	13	18	5.12	1.37	...	3	...	N. W.
23 23	37	4	51	16	34	12	5	18	9	8	14	15	4.53	1.31	...	4	...	W.
23 23	38	8	56	22	38	11	6	16	16	4	11	14	4.72	1.25	...	4	...	S. W.
23 23	39	19	48	18	36	7	4	18	10	8	13	8	4.88	1.55	...	17	...	W.
23 23	38	6	47	16	36	23	4	17	7	11	13	14	7.99	3.68	...	16	...	W.
23 23	36	2	54	22	48	20	5	2	10.5	9.3	11.2	10.8	5.45	2.02	...	4	...	...
23 23	36	19	51	20	35	26	5	18	11	9	11	9	5.61	2.00	27 0	2-4	...	N. W.
23 23	37	8	55	24	42	20	7	bc	...	...	...	11	5.11	2.06	...	4	...	...
23 23	38	8	56	23	41	11	9	17	12	7	12	9	4.36	1.50	...	3	...	...
23 23	30	2	57	21	41	26	5	18	9	12	10	12	6.11	2.02	...	4	...	W.
23 23	34	8	53	21	48	20	5	2	10	9	12	13	6.04	1.98	24 0	4	...	S. E.
e 26	20	52	20	50	20	1	4	10.6	8.0	12.4	12.7	5.76	3.56	21 0	4	...	...	W.

thermograph. †Report received too late to be used in computing means. The means from the blank indicates that the duration is not shown in the original records, but is within twenty-four

8, 9; (j) 7, 8; (k) 5, 19; (m) 7, 8, 9; (n) 5, 8, 26; (p) 8, 19; (q) 8, 9, 20, 29; (r) 20, 23; (s) 20, 22; (ab) 3, 13; (ac) 2, 4; (bb) 5, 30; (bc) 16, 18.

STATIONS.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<i>Western Plateau..</i>	56	55	50	41	46	45	47	50	55	60	64	66	58	54
Alfred Centre.....	56	52	48	38	46	42	44	46	54	60	63	66	55	50
Angelica.....	58	53	50	42	48	44	43	46	52	56	60	64	51	51
Friendship.....	61	54	53	42	48	45	50	51	55	58	60	64	57	52
Humphrey.....	54	51	52	39	46	42	47	50	58	61	64	64	56	50
Arkwright.....	58	48	46	40	42	42	45	50	54	59	62	58	56	50
Sherman.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Elmira*.....	58	59	50	44	51	48	53	56	63	65	69	69	64	57
LeRoy.....	56	58	54	41	46	46	48	54	56	61	66	70	64	56
Mount Morris.....	56	54	58	41	46	46	46	48	54	60	64	66	60	56
Lockport.....	54	52	49	42	42	46	51	54	60	63	72	64	60	52
Victor.....	46	54	53	44	44	46	50	54	58	56	60	67	61	60
Wedgewood.....	54	58	48	40	46	45	46	52	53	62	62	67	60	56
Addison.....	56	61	52	43	50	48	47	48	54	59	68	66	60	56
South Canisteo.....	56	58	50	42	48	46	46	46	51	59	62	70	58	56
Arcade.....	58	51	50	38	44	42	42	48	53	56	61	64	57	50
Varysburgh.....	56	54	48	43	44	44	44	48	55	58	63	66	58	52
Italy Hill.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
<i>Eastern Plateau..</i>	51	58	49	42	45	45	46	48	53	58	63	65	56	55
Binghamton.....	52	59	50	46	48	48	46	47	56	57	66	64	58	55
Oxford.....	48	58	50	45	44	48	46	49	54	56	60	64	59	56
Cortlandt.....	54	57	52	43	43	40	46	42	52	54	60	66	62	57
South Kortright.....	54	58	48	38	43	44	46	46	49	54	61	62	56	57
Brookfield.....	48	56	50	42	40	40	44	47	51	55	60	68	53	54
Middletown*.....	46	64	46	44	.....	52	50	50	57	64	71	.....	.....	55
Port Jervis.....	49	60	47	44	52	51	48	52	56	61	66	66	55	58
Cooperstown.....	48	54	46	42	42	42	47	46	48	57	60	66	55	50
New Lisbon.....	52	58	50	42	44	46	44	46	50	54	58	62	54	53
Quaker Street.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Perry City.....	54	57	50	42	44	44	48	47	52	59	63	67	59	56
Waverly.....	58	62	51	45	49	49	48	49	56	58	68	66	60	58
Newfield Summit.....	52	56	46	40	41	40	42	50	56	59	62	64	60	52
Minnewaska.....	44	55	49	38	46	45	47	52	56	62	68	65	52	51
<i>Northern Plateau</i>	44	50	49	42	40	42	45	47	50	57	61	65	58	55
Lyon Mountain.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Amersand.....	40	48	48	42	38	40	44	46	48	56	60	60	60	55
Gloversville.....	46	54	49	42	42	46	48	48	52	60	62	66	56	54
Constableville.....	46	50	49	42	39	39	44	46	51	56	60	62	54	54
Lowville.....	46	52	51	43	41	44	45	48	50	56	60	68	60	55
Number Four.....	44	48	49	40	38	41	42	46	50	54	64	68	58	56
Turn.....	44	51	50	41	40	42	45	46	52	58	60	66	58	54
<i>Coast Region</i>	45	54	48	50	54	53	50	53	56	60	64	62	52	56
New York city.....	46	55	45	49	54	55	52	56	60	60	66	64	56	57
Willet's Point.....	44	55	48	49	55	52	49	56	57	62	66	62	52	56
Brentwood.....	46	54	46	52	54	53	49	50	52	56	60	57	48	56
Setauket.....	44	52	46	48	53	51	50	51	56	60	66	63	52	57
<i>Hudson Valley</i>	50	58	51	46	51	50	48	51	56	62	65	68	57	55
Albany.....	50	57	50	47	49	50	50	53	58	64	66	71	58	57
Lebanon Springs.....	46	54	50	44	46	44	44	47	49	56	59	65	57	54
Honeymead Brook.....	49	58	47	45	46	50	46	50	58	60	62	68	56	56
Poughkeepsie.....	52	60	51	46	54	52	46	50	58	62	64	67	59	56
Wappinger's Falls.....	55	58	54	45	54	55	48	51	57	64	66	66	57	57
West Point.....	50	60	57	49	54	52	50	54	57	67	72	70	59	55
Boyd's Corners.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Carmel.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Rondout.....	49	57	49	44	51	50	50	50	56	.....	63	66	52	50
Peekskill.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
<i>Mohawk Valley</i>	46	48	50	48	44	46	49	56	66	64	65	75	69	58
Rome.....	41	44	48	52	44	46	48	54	58	68	68	79	80	58
Utica.....	50	52	52	44	44	46	50	58	54	59	62	71	58	57

## STATE METEOROLOGICAL BUREAU.

119

## TEMPERATURES FOR MAY, 1893.

15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Monthly mean.
59	55	46	46	45	59	64	68	68	52	59	47	56	52	54	58	57	54.4
57	54	46	42	47	59	66	68	62	50	62	44	33	48	52	59	58	52.9
54	54	47	46	45	54	63	59	68	51	58	44	37	50	52	56	56	52.7
56	56	48	46	48	56	65	60	68	56	59	46	37	53	53	59	56	52.9
58	52	44	44	47	58	64	63	64	50	60	43	36	50	54	56	60	53.5
55	49	42	43	46	60	60	65	60	48	53	44	54	50	52	56	56	51.7
64	60	51	50	52	64	70	70	72	58	63	53	61	59	64	64	61	59.4
63	58	51	48	50	64	65	64	76	52	59	46	58	53	56	58	58	56.6
60	58	50	49	48	58	64	62	69	52	59	46	57	51	54	57	56	54.8
60	52	48	50	50	60	64	60	66	51	56	46	55	53	55	53	57	54.7
62	58	56	48	48	62	66	62	69	54	58	52	48	53	52	60	57	55.4
60	55	48	45	47	61	66	65	71	53	63	52	54	53	56	59	61	55.6
60	57	50	48	48	57	66	62	73	56	61	51	56	54	54	59	57	55.9
58	56	49	46	45	56	65	66	72	53	61	48	55	52	52	58	56	54.8
58	56	46	44	42	57	60	61	64	48	57	42	56	48	51	53	56	51.7
58	56	50	46	46	58	62	60	68	50	60	43	58	54	54	56	56	53.8
61	57	50	47	46	55	66	62	71	54	60	52	54	53	53	57	58	54.7
60	50	48	48	45	55	65	60	74	54	60	51	54	55	54	58	58	54.9
63	59	52	48	45	53	66	60	71	56	60	50	54	56	52	59	56	54.7
62	58	50	46	45	54	64	50	68	54	62	51	55	53	54	60	57	53.9
60	60	51	47	46	52	64	60	70	53	65	50	56	54	50	53	60	53.8
62	58	50	45	45	52	64	61	70	52	56	48	54	49	50	54	52	52.6
64	59	57	52	52	61	71	71	71	56	65	56	53	57	56	60	61	58.0
61	60	55	54	51	58	72	68	72	60	60	50	54	60	56	59	64	57.7
60	58	50	47	44	52	66	60	70	50	57	49	54	50	50	54	60	53.7
60	58	50	46	44	52	64	58	70	52	55	46	53	50	50	55	56	52.6
60	56	48	45	46	56	66	61	71	55	64	47	56	53	52	60	56	54.7
60	58	50	49	47	55	68	63	74	57	62	51	56	55	55	58	54	56.4
58	54	46	42	43	59	64	63	74	50	58	61	52	50	59	58	59	54.2
60	58	48	48	48	56	66	68	72	56	60	54	50	53	56	58	59	54.8
58	56	50	46	42	53	59	57	68	48	54	49	50	50	51	54	57	51.8
55	54	49	46	38	53	60	59	68	51	50	48	46	48	52	53	57	50.7
62	58	52	50	47	56	62	59	69	53	58	50	52	54	52	54	60	54.0
58	56	51	46	42	52	55	56	68	49	52	48	50	49	50	52	55	51.0
60	58	49	46	42	52	60	58	69	45	55	52	52	49	51	54	56	52.6
58	56	49	54	38	51	61	53	68	44	54	58	52	48	54	54	56	51.4
58	56	50	44	42	52	58	58	68	48	54	46	49	49	50	54	56	51.4
63	57	56	54	54	58	71	70	71	61	59	58	55	56	57	57	62	57.2
62	58	57	56	55	60	74	73	75	64	65	60	54	59	58	60	64	59.0
64	54	56	53	52	58	71	68	68	58	56	55	58	54	60	56	62	57.0
63	57	54	50	55	55	70	68	68	61	66	58	55	56	55	56	61	55.9
62	59	57	55	54	58	68	70	72	62	58	58	52	57	54	56	61	56.8
62	61	56	55	53	56	70	67	73	61	60	58	56	59	56	60	63	57.8
65	62	57	54	53	58	70	68	74	56	61	55	58	58	57	62	62	58.0
59	59	55	58	54	59	60	63	61	71	59	54	52	53	56	52	60	54.2
62	62	58	55	52	55	71	64	74	57	58	66	54	58	55	59	63	56.9
62	61	56	57	56	55	72	64	72	66	59	63	55	60	56	58	64	58.3
64	64	56	56	55	57	73	74	71	68	61	64	58	60	58	58	68	60.2
64	64	56	56	55	57	73	74	71	68	61	64	58	60	58	58	68	60.2
63	58	55	53	52	56	72	67	72	57	59	57	56	58	55	59	62	56.6
63	66	59	53	48	50	69	59	72	62	60	56	54	56	50	62	64	57.2
64	72	65	57	49	50	76	60	70	75	62	60	56	56	52	65	69	59.6
60	60	53	48	46	50	69	58	74	50	59	51	52	53	48	59	58	54.0

## DAILY AND MONTHLY MEAN

STATIONS.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<i>Champlain Valley.</i>	42	44	49	45	46	45	47	48	50	63	64	66	60	58
Plattsburgh Bar'ks	42	44	49	45	46	45	47	48	50	63	64	66	60	58
Glens Falls.....														
<i>St. Lawrence Valley</i>	46	48	49	46	48	45	50	50	54	58	64	72	61	57
Malone.....	44	46	48	42	40	42	48	48	53	62	64	70	62	55
Madison Barracks..	50	51	48	44	44	44	50	47	50	57	64	74	61	56
Watertown.....														
Canton.....	47	50	50	42	43	46	50	51	54	62	66	72	60	56
North Hammond ..	47	45	55	45	48	50	48	51	56	57	62	73	63	59
Ogdensburg.....	45	49	48	44	43	45	52	56	56	56	62	70	60	56
Potsdam.....	44	44	48	47	40	44	52	48	54	60	64	72	58	60
<i>Great Lakes</i> .....	53	51	49	44	44	45	48	50	55	59	65	65	59	53
Dunkirk.....	58	48	44	42	43	44	47	44	50	56	62	59	54	49
Buffalo.....	52	44	48	42	40	44	49	52	58	58	64	58	59	46
Eden Centre.....	54	46	52	46	48	48	44	46	55	58	63	60	62	56
Brockport.....	52	56	50	45	44		49	52	55	60	66	69		54
Rochester.....	55	54	52	41	44	46	50	52	57	62	68	72	62	54
Fort Niagara.....	46	48	50	44	47	48	52	52	50	59	65	66	58	54
Hess Road Station.														
Baldwinsville.....	56	56	52	43	46	47	50	58	58	61	68	67	64	58
Albion.....														
Oswego.....	51	50	46	40	42	41	46	46	53	56	63	66	58	49
Palermo.....	51	53	50	42	44	44	46	48	53	56	64	69	56	54
Lyons.....	53	58	52	44	44	47	49	52	56	60	65	70	64	56
Erie, Pennsylvania.	54	47	47	48	44	44	47	50	56	61	68	58	57	52
<i>Central Lakes</i> .....	54	55	50	44	48	48	48	50	56	61	64	68	61	56
Fleming.....	54	57	51	44	46	45	47	52	56	58	66	67	62	56
Geneva.....	52	56	50	44	46	47	51	52	55	60	66	70	60	59
Watkins.....	53	47	48	46	46	47	47	47	55	60	68	66	60	54
Romulus.....														
Hammondsport....	53	59	50	44	46	46	46	51	56	62	61	67	61	56
Ithaca.....	56	58	50	42	46	47	48	50	56	63	65	70	60	54
Monthly means.	48.7	52.1	49.2	44.8	45.9	46.2	47.8	50.3	54.1	60.2	63.9	67.2	59.1	55.7

\* Means of tri-daily observations. † Mean of the maximum and minimum by the Draper and minimum of the ordinary self-registering thermometers. The means from the tri-daily received too late to be used in computing averages.

# STATE METEOROLOGICAL BUREAU.

121

## TEMPERATURES FOR MAY, 1893 — (Concluded).

15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Monthly mean.
59	56	56	52	46	54	62	58	64	54	53	52	46	54	54	54	59	53.4
59	56	56	52	46	54	62	58	64	54	53	52	46	54	54	54	59	53.4
57	56	56	47	47	56	59	58	70	51	56	51	52	51	55	58	61	54.4
57	56	58	46	42	54	62	56	70	46	52	45	48	48	54	57	58	52.6
61	58	53	48	47	59	58	57	72	54	60	55	56	52	54	58	60	54.7
63	63	55	46	47	58	59	58	72	51	58	44	52	52	55	59	63	55.1
61	62	60	44	51	57	61	61	71	55	55	59	53	52	55	60	63	56.0
59	54	55	49	49	57	58	59	67	50	56	50	53	51	57	57	63	54.4
53	53	52	48	44	54	58	56	70	48	56	54	52	50	54	58	60	53.4
58	55	48	47	50	60	62	62	68	51	58	49	54	51	56	58	58	54.5
54	50	44	44	46	60	60	60	62	50	55	46	54	50	52	56	58	51.6
56	54	46	48	48	61	52	63	64	50	55	47	54	50	57	54	60	52.7
59	56	49	48	46	60	70	76	70	50	52	55	48	40	52	60	68	55.0
60	56	51	48	49	62	64	58	67	48	59	52	56	55	55	52	58	57.2
60	56	49	48	50	62	66	61	72	51	61	47	58	53	56	60	58	56.0
57	48	46	48	54	60	63	58	66	54	60	46	50	54	54	58	54	54.2
66	56	52	43	64	50	59	62	66	52	61	56	55	54	60	60	54	56.4
57	58	48	42	46	58	56	59	72	46	59	46	54	48	52	58	56	52.4
56	58	54	49	46	62	61	56	78	50	54	49	54	52	54	58	56	53.9
60	58	52	48	48	60	64	62	70	52	63	50	56	53	55	60	59	56.1
54	50	48	46	49	64	62	66	67	54	60	46	54	54	56	60	58	54.0
62	58	50	46	47	58	68	64	72	63	63	54	55	54	55	60	60	56.0
62	60	52	46	44	58	66	62	72	52	62	57	56	52	55	56	60	55.9
62	56	50	48	50	58	68	62	78	55	64	50	54	55	56	64	60	56.6
61	57	50	43	47	61	68	71	73	53	63	55	55	54	53	58	59	55.4
61	58	50	46	46	57	67	61	72	52	62	58	55	54	58	61	62	56.0
64	58	50	46	46	58	69	64	72	54	63	48	54	54	54	62	58	56.1
60.1	57.9	52.9	49.2	47.8	55.9	65.0	62.0	69.7	54.7	58.2	52.6	53.2	53.6	54.1	57.8	59.9	55.1

thermograph. Means for all stations not otherwise indicated are derived from the maximum observations are derived by the formula  $(7 \text{ A. M.} + 2 \text{ P. M.} + 9 \text{ P. M.} + 9 \text{ P. M.}) \div 4$ . [Reports

## DAILY AND MONTHLY PRECIPITA

STATIONS.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<i>Western Plateau..</i>	0.65	0.08	0.07	1.36	0.22	0.05	T.	0.00	0.00	0.00	0.00	0.22	0.24	0.10
Alfred Centre.....	*	*	*	+2.30	.50	.50								
Angelica.....	.48	.02	T.	1.23	.18	.02						.12	.41	.20
Bolivar.....														
Friendship.....	.67	.02		1.27	.21	T.						.56	.23	T.
Humphrey.....	.86			.70	.14	.02	T.					.85	.15	.02
Little Valley.....														
Cherry Creek.....	.77	.07		.40	.13		.04					.05	T.	.10
Elmira.....	.65		.32	1.86	.07	.05						T.	.55	
Akron.....	.73	T.		1.35	.13	T.						.35	1.68	.02
LeRoy.....	1.40	T.	.80	.80	.18							.35	.14	
Avon.....	.20			1.55	.05							T.		
Mt Morris.....	.63			1.10	.22							.17	.17	
Lockport.....	1.00	T.		1.24	.30	T.						.35	.65	T.
Victor.....	.64	.12		1.42	.83	.06	T.							.01
Wedgewood.....	.52		.27	1.85	.05	.05								.22
Addison.....	.62	.06	.03	1.72	.05	.04								.50
Atlanta.....	.35	.10		2.78	1.06	.05								.02
Pine City.....														
South Canisteo.....	.15		T.	1.72	.10	.08						.10	.15	T.
Arcade.....	.67			1.68	.23	.06						.61	.06	.02
Attica.....														
Castile.....	.64	.14		1.43	.23	.02	.01					.15	.36	.06
Varysburgh.....	.66			.30	.05	.06						.52	.63	.08
<i>Eastern Plateau ..</i>	0.65	0.15	0.25	1.98	0.14	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.19
Binghamton.....	.51	.25	.20	1.85	.05	.02								.03
Chenango Forks.....														
Oxford.....	.75	.05	.24	1.90	.13	.08							.16	.10
Cortland.....	.60	.16		2.34	.39									
Deposit.....			*	+1.77		.09							.56	.10
South Kortright.....	.99												.10	.52
Brookfield.....	1.10	.06	.09	2.15	.02									
Apulia.....													.50	
Middletown.....														
Port Jervis.....	.30	1.15	.15	2.66		.26							.20	.23
Warwick.....														
Cooperstown.....	1.25	.06	.16	2.00	.10	.07							.72	.28
New Lisbon.....	.64	.01	.11	1.66	.01	.01								.58
Quaker street.....														
Perry City.....	.45		.45	2.12	.32	.04								.06
Liberty.....	.18	.23	.40	1.02	.37								.64	
Newark Valley.....	.90		.45	1.95	.05	.02								.07
Waverly.....	.28		.57	2.12	.02	.05								.39
Ellis.....	.50	.02	.18	2.00	.31	.05								.07
McLean.....														
Newfield Summit.....														
Minnewaska.....	*	+7.0	*	+3.05	.30								*	+1.45
<i>Northern Plateau..</i>	0.74	0.22	0.09	1.02	0.59	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.45	0.07
West Chazy.....	.58	.11	.06	.99	.17	.02							T.	.03
Au Sable Forks.....														
Keene Valley.....														
Amersand.....		1.12	T.	.52	.42	.09								T.
Gloversville.....	1.28	.16	.23	1.62	.03	.02							.56	T.
Blue Mt. Lake.....														
Bisby Lodge.....														
Constableville.....					1.95								1.09	
Lowville.....	1.22	.08		2.25	.09	.09							.43	.12
Number Four.....	*	+1.41		.08	2.02	.23							*	*
Turin.....	1.16	.06	*	+2.21	.06	.06							.45	.15
Boonville.....													.49	.23
Galway.....														
King's Station.....	.96		.40	1.68		.09							.60	

TION FOR MAY, 1893 — (INCHES) — (Continued).

15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total.
0.34	0.99	0.47	0.26	0.00	0.09	0.06	T.	0.31	0.01	0.02	0.18	0.07	0.01	T.	T.	0.84	6.12
.42	.....	*	*	+1.42	.....	.08	.....	.20	.....	.25	.25	.....	.....	.....	.....	.82	5.89
.19	.64	.58	.25	.....	.69	.09	.....	.45	.02	.19	.15	.....	.....	.....	.02	.37	5.65
.38	.69	.21	.05	.....	.09	.....	.....	.47	T.	.....	.23	.07	.....	T.	.....	.55	5.70
.80	.58	.28	.08	.....	.13	.....	.....	.34	.....	.....	.33	.06	.....	.....	.....	.08	5.42
.70	1.44	.53	.10	.....	.16	.....	.....	.25	.06	.....	.17	.10	.13	.....	.....	.....	5.20
.01	1.10	.10	.10	.....	.....	.....	.....	.53	.....	.....	.27	.....	.....	.....	.....	1.33	6.84
T.	1.32	.76	.29	.....	.05	T.	.05	.22	T.	.12	.05	.01	.....	.....	T.	.....	7.20
.20	.90	.25	.71	.....	.05	.05	.....	.20	.....	.05	.....	.....	.....	.....	.05	.....	6.13
.50	.80	.22	.55	.....	.02	.....	.....	.05	.....	.06	T.	T.	.....	.....	.....	.....	4.00
.30	.69	.33	.20	.....	.40	.70	.....	.25	.....	.16	.30	.....	.....	.....	.....	.....	5.62
.46	1.04	1.24	.53	.....	.09	.....	.....	.17	.....	.03	.05	.03	.....	.....	T.	.....	7.18
.20	1.12	.06	.36	.....	.03	.....	.....	.30	T.	T.	.05	.10	T.	T.	T.	T.	6.19
.04	1.45	.04	.07	.....	T.	.....	.....	.29	.....	.....	.33	.18	.....	.....	T.	T.	5.37
.28	1.05	.06	.05	.....	.02	.....	.....	.37	.....	.....	.22	.04	.....	.....	2.75	.....	7.87
.30	1.09	.21	.38	.....	.09	.....	.....	.39	.....	.....	.29	.08	.....	T.	.....	.14	7.33
T.	1.87	.22	T.	.....	.04	.....	.....	.26	.....	T.	.25	.10	.....	T.	.....	.08	5.25
.60	1.00	1.12	.28	.....	.18	.....	.....	.39	.07	.....	.21	.10	.....	T.	.....	T.	7.28
.80	.94	.53	.24	.....	.16	.07	.....	.34	.....	.....	.19	.05	.....	.....	.....	.99	6.68
.25	1.05	.80	.46	.....	.12	.10	.....	.32	.....	T.	.08	.04	.....	T.	.....	.....	5.52
0.06	0.82	0.29	0.14	0.01	T.	0.00	0.00	0.44	T.	0.01	0.20	0.19	0.01	T.	0.20	0.20	6.34
.07	.59	.20	.06	.....	.....	.....	.....	.16	.....	.....	.20	.33	.22	.....	.08	.34	5.16
.....	.95	.48	.10	.....	.....	.....	.....	.30	.....	T.	.25	.55	.....	.....	T.	.24	6.23
.....	1.18	.70	.14	.....	.....	.....	.....	.49	.....	.....	.15	.14	.....	.....	.....	.....	6.29
.01	.16	.29	.11	.....	.....	.....	.....	.52	.....	.....	*	+ .48	.....	.....	.49	.24	5.81
.10	.30	.66	.30	.....	.....	.....	.....	.25	.....	.....	.02	.12	.....	.....	.08	.....	5.87
.....	.....	.....	.....	.....	.....	.....	.....	.55	.....	.....	.16	.....	.....	.....	.77	.....	.....
.03	1.14	.....	.....	.....	.....	.....	.....	1.28	.....	.18	.02	.....	.....	.....	.59	.25	8.44
.02	.60	.08	.28	.....	.....	.....	.....	.48	.....	.....	.13	.27	.....	.....	.10	.18	6.74
.12	.07	.62	.26	.10	.....	.....	.....	.16	.02	.....	.12	.14	.....	.....	.13	.15	4.90
.07	.38	.30	.24	.....	T.	.....	.....	.44	.....	.....	.40	.04	.....	.....	.04	T.	5.37
.....	.82	.18	.....	.....	.....	.....	.....	1.02	.....	.....	.32	.25	.....	.....	.....	.....	5.43
T.	1.80	.14	.04	.....	T.	.....	.....	.30	.....	T.	.45	.16	.....	.....	.....	.33	.....
.01	1.63	.06	.02	.....	T.	.....	.....	.47	.....	T.	.36	.12	.....	.03	.08	1.33	7.54
.46	.96	.07	.52	.03	.....	.....	.....	.20	.....	.....	.29	.49	.....	.....	.07	.06	6.30
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	*	+2.00	.....	.....	.....	.....	.....	.....	.....	.....	T.	.....	.....	.....	.63	.....	8.03
T.	0.62	0.29	0.22	T.	0.00	0.00	0.00	0.85	0.00	0.17	0.01	0.20	0.02	0.00	0.11	0.03	5.38
.....	T.	.08	.20	.....	.....	.....	.....	.58	.....	.17	.....	.01	T.	.....	.12	.....	3.12
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.53	T.	.....	.....	.....	.40	.....	.22	.....	.10	.06	.....	.....	.....	3.46
.....	.50	.41	.07	.....	.....	.....	.....	.50	.....	T.	.04	.36	.03	.....	.21	T.	6.06
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	1.20	.....	.....	.....	.....	.....	.....	.13	.....	T.	.....	.35	.....	.....	.15	.....	4.87
.....	.64	.71	.47	.03	.....	.....	.....	.40	.....	.18	.....	.07	.....	.....	.....	.....	6.78
+4.3	*	*	+1.32	.....	.....	.....	.....	.....	.....	.62	.....	.13	.....	.....	.03	.....	6.30
.....	1.09	.27	.08	.....	.....	.....	.....	.26	.....	.20	.....	.25	.....	.....	.05	.02	6.39
.....	.60	.73	.35	.....	.....	.....	.....	.40	.....	.14	.....	.27	.05	.....	.10	.20	.....
.....	.90	.15	.08	.....	.....	.....	.....	.47	.....	.....	.08	.28	.....	.....	.31	.06	6.06



## DAILY AND MONTHLY PRECIPITATION

STATIONS.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<i>Coast Region</i> .....	0.20	0.15	0.68	2.10	0.08	0.51	0.00	0.00	T.	0.00	0.00	0.06	0.81	T.
New York City.....	.54	T.	.49	2.65		.49							.07	.01
Willet's Point.....				2.05	.40	.49						.80	.50	
Brentwood.....	T.		1.50	1.00		.80							1.10	
Setauket.....	.26	T.	.76	2.17		.44			T.				1.11	
Bedford.....	.22	.79	.42	2.64		.35							1.27	
<i>Hudson Valley</i> .....	0.37	0.48	0.29	2.43	0.04	0.06	T.	0.00	0.00	0.00	0.00	0.00	0.88	0.22
Albany.....	.57	.05	.25	2.17	T.	T.							.23	.51
Bethlehem Centre.....														
Lebanon Springs.....	.76	.16	.16	2.35	.20	.04	.01						T.	T.
Honeynead Brook.....	.21	.43	.48	2.06	T.	.10							1.64	.23
<i>Pawling</i> .....														
Poughkeepsie.....	.14	.55	.65	2.97	T.	.11							1.39	.32
Wappinger's Falls.....	.11	.92	.52	2.38	.05	.14							1.29	.24
West Point.....	.18	1.10	.30	3.56									1.12	.14
Boyd's Corners.....														
<i>Carmel</i> .....														
South E. Reservoir.....														
Schodack Depot.....														
Stillwater.....	.32	*	*	13.68									*	12.00
Rondout.....	.65	.15	.12	1.56	.05	.13							.11	
Easton.....														
<i>Mohawk Valley</i> .....	0.80	0.24	0.08	1.90	0.43	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.28	0.54
Rome.....	.59	.48		1.71	.68									.70
Utica.....	1.01		.16	2.10	.18	.02							.56	.86
<i>Champlain Valley</i> .....	?	?	0.47	0.53	T.	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.02	1.06
Plattsburgh Barracks.....		1.91		.96	T.	.06							.03	.11
Fort Henry.....	.69		.94	.68										
Glens Falls.....														
Whitehall.....														
<i>St. Lawrence Valley</i> .....	0.53	0.29	0.40	1.06	0.47	0.06	0.00	0.00	0.00	0.00	0.00	0.01	0.15	0.06
Malone.....	.46	.45	.02	.56	.27	.03								.14
Madison Barracks.....	.43	.24	1.49	.81		.06							.54	
Watertown.....														
Canton.....	.85		*	*	12.97	.14							.08	.04
<i>DeKalb Junction</i> .....		.75	.39	1.95	.24	.11							.15	
North Hammond.....	.78	.32		2.00	.20	.01							.10	.21
Ogdensburg.....	*	1.90	*	*	12.00	.07							*	1.19
Potsdam.....	.66		.10		1.66							.09	.05	
<i>Great Lakes</i> .....	0.74	0.05	0.18	0.98	0.08	0.02	T.	0.00	0.00	0.00	0.00	0.06	0.07	0.11
Dunkirk.....	.51	.02		.10	.02	T.						.09	.16	.06
Buffalo.....	.64	.01		.56	.04	T.						.12	.02	.12
Eden Centre.....	.97		1.00	T.	T.	.10						.10	.15	.10
<i>Adams Centre</i> .....														
Brockport.....	1.12	.04	T.	1.12	.07	T.						.16	.01	.08
Rochester.....	.72	.06	.01	2.47	.11	T.	.01					T.	T.	T.
Fort Niagara.....	.62			.80								.20	.07	.13
<i>Hess Road Station</i> .....														
Baldwinsville.....	.52		1.37	.53									.08	T.
Albion.....														
Lyndonville.....														
Demster.....	1.04	.06	.08	1.70	.04	.08							.14	.46
<i>Oswego</i> .....	.95	.04		1.31	.01	T.	T.						.12	.17
Palermo.....	.60			1.25	.10	.08							.20	.15
Phoenix.....	.63	.12		1.75	.10								T.	.12
Lyons.....	.48	.25		1.15	.60	T.	T.							
Erie, Pa.....	.54				.01	.63						.18	.13	.12
<i>Central Lakes</i> .....	0.50	0.03	0.37	1.69	0.08	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08
Fleming.....	.70	.10		2.00										.08
Geneva.....	.63		.03	2.05		T.								.08
Watkins.....			1.50	.40		.08								.20

TION FOR MAY, 1893 — INCHES — (Continued).

15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total
T. .76	0.15	0.01	0.00	0.00	T. 0.00	0.04	0.12	0.01	0.05	0.04	0.04	0.00	0.00	0.01	5.77		
.58	.02	.03					.10		T. .08	.08							5.06
.58							.19		.02	.02							4.55
.96							.20		.20	T. .10							5.85
.90						T. .16			T. .02	.05							5.87
.80	.69	.04					.15		.02	.09				.05			7.53
T. .81	0.10	0.04	0.00	0.00	0.00	0.00	0.49	0.15	0.00	0.05	0.18	0.00	0.00	0.22	0.03	6.52	
T. .23	.12	.16					.29	.21		T. .19				.10		5.08	
.47		.15					.79			.02	.10				.81	5.52	
.62	T. .15	T. .15					.75	.20		.05	.18				.20	.03	7.21
.38	.05							.71		.13	.06				.22		7.06
.02	.42	.08						T. .52		.10	.08				.21	.19	7.37
.52	.53							.40		.07					.33		8.24
.30							.68				.50				.30		7.78
							.69				.31				.12		3.89
0.02	0.44	0.52	0.34	0.08	0.20	0.00	0.00	0.26	0.00	0.02	0.10	0.2	0.09	0.00	0.05	0.60	7.16
.12	.82	.30	.16	.41				.52		.05	.18	.04	.12		.16		6.47
.08	.77	.23	.38							.03	.21	.06			.10	1.05	7.84
T. .24	0.04	0.14	0.00	0.00	0.00	0.00	0.56	0.00	0.06	0.00	0.02	0.00	0.00	0.12	0.00	3.38	
T. .08	.07	.15					.50		.11		.03			.23		3.26	
.41	.02	.14					.62									3.50	
0.02	0.54	0.54	0.57	0.03	0.01	0.01	0.00	0.19	0.00	0.27	0.00	0.10	0.10	0.00	0.14	0.00	5.78
.13	T. .09	.76	.21					.17		.29		.09	.21		.17		4.05
.85	.75	.25		.04				.04		.06					.03		5.59
*	*	+2.08		T. .04				.34		T. .23		T. .48					7.21
.08	.59	.74	.75			.02		.17		.27		.19			.08		6.38
.70	.60	.53		.04	.02		.20		.10		.12			.10			6.03
*	*	+1.87					.39		.22		*	+1.18					5.82
.56	*	*	+3.80						.64			.38			.14		5.38
0.07	0.44	0.80	0.52	0.03	0.04	0.01	0.00	0.15	T. .25	0.02	0.02	0.06	0.01	0.01	0.02	0.01	5.50
.19	1.58	.95	.21		.11			.25		.06							4.33
.01	1.36	1.44	.06		.04	.07		.18	T. .04	.05	T. .05						4.67
.10	1.60	1.70	1.80		.15			.36	T. .04	T. .05	T. .05						8.13
.08	1.14	.36	.68	.37	.07				.06	.03	T. .03				.01		4.99
.11	1.17	.21	.47		.15			.14	.01	.02	.02	T. .02			T. .01		5.69
.08	3.05	.11	.10					.10									5.18
.21	1.26	.52	.14	T. .07				.20			.06	.16		.07	.05	T. .01	5.12
.96	.24	.72						.24		.05		.10	.04		.04		5.89
.04	.80	.28	.50		.01			.09		.02	T. .17				.02		4.53
.02	.95	.15	1.00					.08			.15	.12			.04		4.72
T. .90	.60	.60	.08					.18		.05	T. .02	.13			.05		5.28
T. .26	1.55	.44									.15	T. .03			T. .03		4.88
.18	3.68	2.33	.14		T. .16			.16		T. .06	.08				.10		7.99
0.26	1.25	0.11	0.16	0.00	T. .00	0.00	0.60	0.22	0.00	T. .18	0.17	0.09	T. .45		T. .01	0.10	5.45
.20	.30	* +.96			T. .01			.30			T. .32				T. .01		5.61
.14	1.44	.18	.23		T. .01			.01			.10	.32			T. .01		5.11
T. .145	.10							.21			.35	.12					4.36

## DAILY AND MONTHLY PRECIPITA

STATIONS.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<i>Cent. Lakes—(Con).</i>														
Romulus .....	.57	.06	.....	2.02	.24	.....	.....	.....	.....	.....	.....	.....	.....	T.
Hammondsport .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ithaca .....	.59	.....	.32	1.98	.17	.08	.....	.....	.....	.....	.....	.....	.....	.19
Penn Yan .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Average .....	0.58	0.18	0.28	1.54	0.21	0.09	T.	0.00	T.	0.00	0.00	0.04	0.30	0.14

\* Amount included in next measurement.

† Not used in computing the averages.

TION FOR MAY, 1893 — (INCHES) — (*Concluded*).

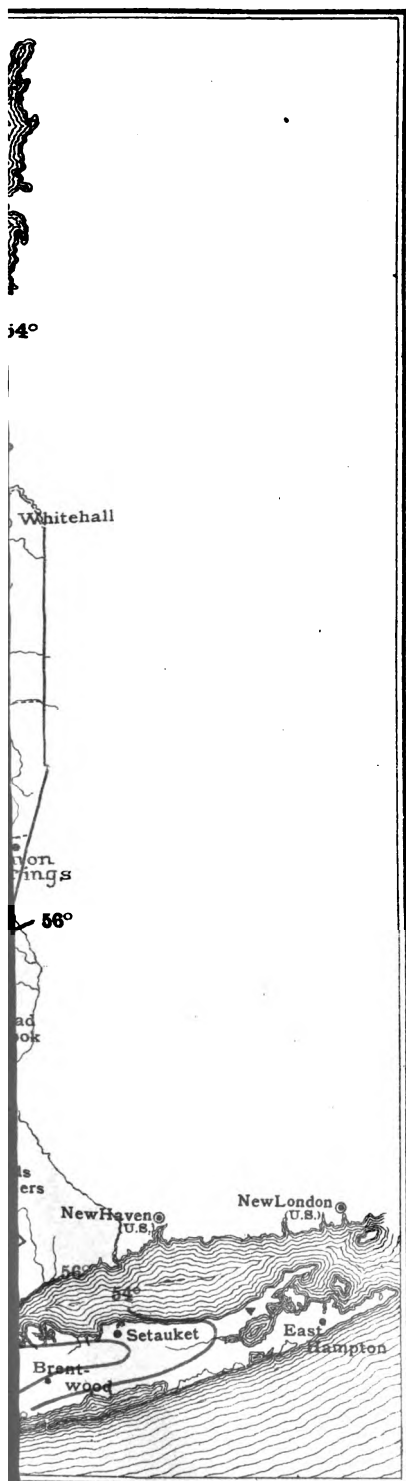
15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total.
.80	1.14	.18	.29	.....	T.	.....	.....	.03	.....	.....	.13	.15	.....	.....	.....	.50	6.11
.18	1.80	.02	.14	.....	T.	.....	.....	.54	.....	T.	.32	.26	T.	T.	T.	T.	6.04
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
0.08	0.65	0.33	0.24	0.02	0.03	0.01	T.	0.30	0.03	0.06	0.08	0.12	0.04	T.	0.09	0.18	5.74

‡Record for the month incomplete.    | Reports too late to be used in computing the averages.

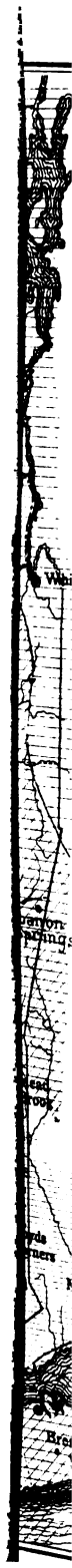
## TEMPERATURE AND RAIN

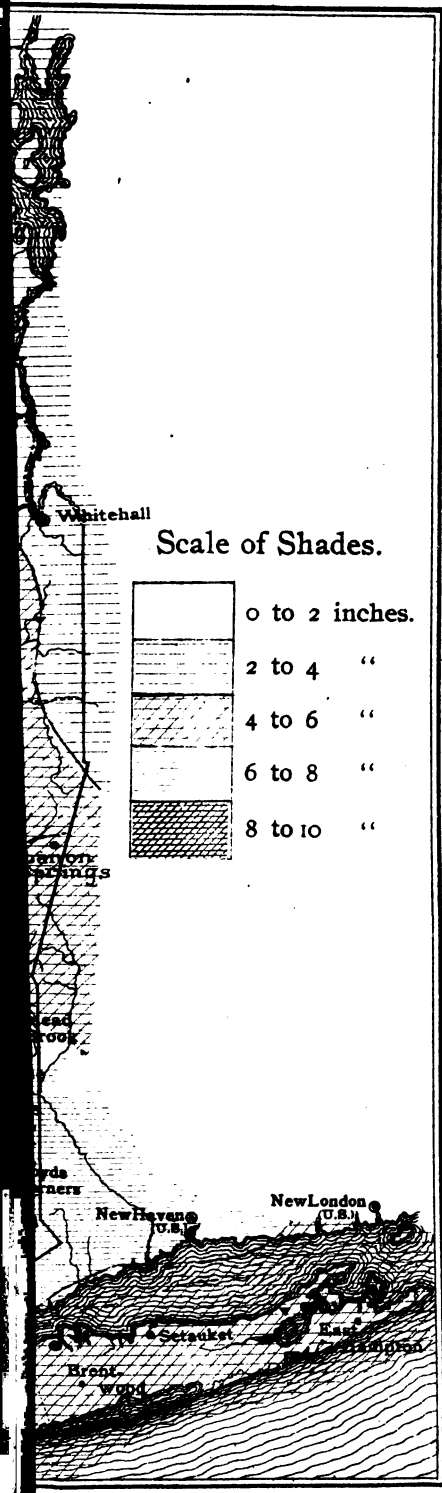
STATION.	County.	TEMPERATURE — (DEGREES FAHR.).									
		Normal for the month of May.	Length of record, years.	Record begins.	Record ends.	Mean for May, 1893.	Departure from the normal.	EXTREMES OF MONTHLY MEAN TEMPERATURE FOR MAY.			
								Highest.	Year.	Lowest.	Year.
Western Plateau.....		55.2				55.2	0.0				
Angelica*	Allegany	53.6	11	1854	1898	52.7	0.9	56.6	1889	51.8	1890
Humphrey	Cattaraugus	55.0	10	1893	1898	53.5	-1.5	61.5	1887	53.1	1890
Elmira*	Chemung	56.9	13	1852	1898	56.4	+0.5				
Eastern Plateau.....		55.0				54.6	-0.4				
Cooperstown	Otsego	54.4	40	1854	1898	52.7	-1.7	60.7	'81-'87	46.7	1890
Waverly	Tioga	55.5	12	1888	1898	55.4	+0.9	65.8	1887	54.6	1890
Northern Plateau.....		52.6				52.6	-1.9				
Keene Valley*	Essex	50.7	7	1879	1891						
Lowville	Lewis	54.5	25	1827	1898	52.6	-1.9				
Coast Region.....		58.3				57.9	-0.4				
New York City	New York	59.4	28	1871	1898	59.0	-0.4	65.0	1890	53.5	1890
Setauket	Suffolk	57.2	8	1886	1898	56.8	-0.4	60.1	1887	55.3	1890
Hudson Valley.....		58.8				58.0	-0.9				
Albany	Albany	59.1	20	1874	1898	58.0	-1.1	66.4	1890	56.5	'74
Honey-mead Brook	Dutchess	57.2	10	1884	1898	56.9	-0.3	60.5	1887	53.0	1890
Poughkeepsie*		59.3	22	1828	1898	58.2	-1.1				
West Point	Orange	59.4	63	1824	1898	60.2	+0.8	68.2	1868	58.5	1890
Rondout*	Ulster	59.2	22	1828	1898	56.6	-2.6	63.2	1838	58.9	1890
Mohawk Valley.....		56.3				54.8	-1.5				
Utica*	Oneida	55.3	33	1826	1898	54.8	-0.5	65.8	1826	51.6	1890
Champlain Valley.....		55.3				53.4	-1.9				
Plattsburgh Barracks	Clinton	55.3	25	1839	1898	53.4	-1.9	63.1	1847	50.3	1890
St Lawrence Valley.....		55.3				54.8	-0.5				
Madison Barracks	Jefferson	54.4	31	1829	1898	54.7	+0.3	60.5	1829	48.7	1890
Canton*	St. Lawrence	56.4	31	1762	1898	55.1	-1.3	65.9	1887	51.6	1890
North Hammond		55.9	15	1866	1898	56.0	+0.1	68.3	1870	50.3	1890
Potsdam*		54.6	25	1828	1898	53.4	-1.2				
Great Lakes.....		54.9				54.4	-0.5				
Buffalo	Erie	54.1	23	1871	1898	52.7	-1.4	61.6	1887	49.3	1890
Rochester	Monroe	56.2	23	1871	1898	56.0	-0.2	64.2	1886	50.1	1890
Fort Niagara	Niagara	54.6	26	1829	1898	54.2	-0.4				
Baldwinsville	Onondaga	53.9	19	1849	1898	56.4	+2.5				
Oswego	Oswego	54.0	23	1871	1898	52.4	-1.6	61.4	1890	50.4	1890
Palermo		54.8	41	1854	1898	53.4	-1.4	60.9	1887	47.5	1890
Lyons	Wayne	55.1	7	1860	1898	56.1	+1.0				
Erie, Pennsylvania	Erie	56.7	20	1874	1898	54.0	-2.7	65.0	1880	51.0	1890
Central Lakes.....		56.3				56.4	0.0				
Geneva	Ontario	55.4	16	1854	1898	56.6	+1.2				
Ithaca	Tompkins	57.2	15	1879	1898	56.1	-1.1	64.6	1880	52.2	1890
Average departure ..							-0.6				

\* Location of the instruments changed.



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## STATE METEOROLOGICAL BUREAU.

129

## ALL STATISTICS FOR MAY.

STATION.	County.	RAINFALL (INCHES).							EXTREMES OF MONTHLY PRECIPITATION FOR MAY.			
		Average for the month of May.	Length of record, years.	Record begins.	Record ends.	Total for May, 1893.	Departure from the average.		GREATEST.		LEAST.	
									Amount.		Amount.	
									Year.		Year.	
Western Plateau.....		4.40	...	...	...	5.97	+1.57	...	...	...	...	...
Angelica.....	Allegany.....	3.85	9	1871	1893	5.65	-1.80	7.28	1890	1.00	1872	
Humphrey.....	Cattaraugus.....	5.14	11	1883	1893	5.42	-0.28	9.11	1890	1.45	1891	
Elnira.....	Chemung.....	4.21	17	1852	1893	6.84	-2.63	...	...	...	...	
Eastern Plateau.....		4.17	...	...	...	7.57	-3.40	...	...	...	...	
Cooperstown.....	Otsego.....	4.34	40	1854	1893	6.74	-2.40	8.84	1890	0.36	1879	
Port Jervis.....	Orange.....	4.65	9	1880	1893	8.44	-3.79	8.44	1893	1.22	1880	
Waverly.....	Tioga.....	3.53	12	1882	1893	7.54	-4.01	7.54	1893	0.59	1891	
Northern Plateau.....		2.05	...	...	...	6.78	-3.87	...	...	...	...	
Keene Valley.....	Essex.....	3.26	7	1879	1891	...	...	...	...	...	...	
Lowville.....	Lewis.....	2.91	23	1827	1893	6.78	-3.87	...	...	...	...	
Coast Region.....		3.48	...	...	...	5.46	-1.98	...	...	...	...	
New York city.....	New York.....	3.19	23	1871	1893	5.06	-1.87	6.53	1886	0.73	1877	
Setauket.....	Suffolk.....	3.78	8	1885	1893	5.87	-2.09	5.87	1893	0.10	1887	
Hudson Valley.....		4.11	...	...	...	7.08	-3.10	...	...	...	...	
Albany.....	Albany.....	3.18	20	1874	1893	5.08	-1.90	5.30	1892	0.87	1879	
Honeymead Brook.....	Dutchess.....	3.75	10	1884	1893	7.21	-3.46	7.21	1893	0.94	1887	
West Point.....	Orange.....	5.03	42	1810	1893	8.24	-3.21	11.66	1868	1.02	1877	
Boyd's Corners.....	Putnam.....	4.67	9	1866	1893	...	...	8.79	1868	1.36	1891	
Rondout.....	Ulster.....	3.94	23	1829	1893	7.78	-3.84	8.90	1848	0.30	1842	
Mohawk Valley.....		3.71	...	...	...	7.84	-4.13	...	...	...	...	
Utica.....	Oneida.....	3.71	37	1826	1893	7.84	-4.13	8.69	1890	0.35	1829	
Champlain Valley.....		2.61	...	...	...	3.26	-0.65	...	...	...	...	
Plattsburgh Barracks.....	Clinton.....	2.61	32	1840	1893	3.26	-0.65	7.13	1850	0.18	1879	
St Lawrence Valley.....		3.11	...	...	...	5.26	-2.16	...	...	...	...	
Malone.....	Franklin.....	3.10	12	1830	1893	4.05	-0.95	...	...	...	...	
Madison Barracks.....	Jefferson.....	2.67	31	1840	1893	5.59	-2.92	6.15	1850	0.75	1887	
North Hammond.....	St. Lawrence.....	3.46	15	1866	1893	6.03	-2.58	8.00	1867	0.66	1876	
Potsdam.....	".....	3.20	24	1828	1893	5.38	-2.17	5.38	1893	0.79	1891	
Great Lakes.....		2.94	...	...	...	5.48	-2.54	...	...	...	...	
Buffalo.....	Erie.....	3.97	23	1871	1893	4.76	-1.39	7.35	1892	0.53	1877	
Rochester.....	Monroe.....	3.18	23	1871	1893	5.69	-2.51	6.52	1883	1.12	1891	
Fort Niagara.....	Niagara.....	2.53	34	1841	1893	5.18	-2.65	6.68	1883	0.21	1887	
Oswego.....	Oswego.....	2.73	23	1871	1893	4.53	-1.80	7.03	1883	0.54	1877	
Palermo.....	".....	1.97	41	1854	1893	4.72	-2.75	6.90	1867	0.30	1870	
Erie, Pennsylvania.....	Erie.....	3.88	20	1874	1893	7.99	-4.11	8.05	1892	1.04	1879	
Central Lakes.....		3.80	...	...	...	5.58	-1.77	...	...	...	...	
Geneva.....	Ontario.....	3.58	22	1850	1893	5.11	-1.53	6.59	1867	1.51	1860	
Ithaca.....	Tompkins.....	4.03	15	1879	1893	6.04	-2.01	6.84	1882	0.61	1891	
Average departure.....							+2.49					

during the period covered by the record.

## Meteorological Summary for June, 1893.

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The average atmospheric pressure (reduced to sea-level and 32 degrees Fahr.) for the State of New York during June was 29.99 inches. The highest barometer was 30.31 inches, at Albany and New York city, on the eighth, and the lowest was 29.57, at Buffalo and Watertown, on the twenty-second. The pressure was highest along the Atlantic coast, decreasing westward toward the Great Lakes. The average of the mean pressure at six stations of the National Bureau was 0.03 inch above the normal value. The excess was greatest at Albany and Rochester, and least at Buffalo.

The mean temperature of the State, as derived from the records of sixty-nine stations, was 67.9 degrees; the highest general daily mean being 77.2 degrees on the twenty-first, and the lowest 61.0 degrees on the seventh. The highest local monthly mean was 71.6 degrees at Elmira, and the lowest 64.8 degrees at Constableville, Lewis county. The maximum temperature reported during the month was 99 degrees at West Point on the twentieth; while the minimum was 37 degrees at South Kortright, Delaware county, on the eighth, and at Brookfield, Madison county, on the first. The mean monthly range of temperature was 44 degrees; the greatest range being 58 degrees at Eden Centre, Erie county; and the least 30 degrees at Dunkirk, Chautauqua county. The mean daily range was 21 degrees; the greatest daily range being 45 degrees at South Kortright on the eighth, and the least 2 degrees at Alfred Centre, on the twenty-seventh. The mean temperature of the various sections of the State were as follows: The Western plateau, 67.6 degrees; the Eastern plateau, 67.3 degrees; the Northern plateau, 65.5 degrees; the Coast region, 67.8 degrees; the Hudson valley, 68.9 degrees; the Mohawk valley, 68.8 degrees; the Champlain valley, 66.3 degrees; the St. Lawrence valley, 68.9 degrees; the Great Lake region, 68.4 degrees; and the Central Lake region, 69.4 degrees.

The average of the mean temperature at twenty-seven stations possessing records for previous years was 2.4 degrees above the normal; the values being in excess at all stations excepting Erie, Pa., and Setauket, L. I.

The mean relative humidity was 75 per cent. The mean dew point was 59 degrees.

The average precipitation, as derived from the records of eighty-four stations, was 2.47 inches of rain. The rain fall was unevenly distributed, occurring largely in the form of local showers. The general maximum occurred over the highlands of the eastern, western and northern sections, ranging from four to six inches at several stations, while on Long Island the total amount was under one inch. The greatest local monthly precipitation was 5.76 inches at South Kortright; and the least was 0.58 inches, at Setauket, L. I. Cases of excessive daily or hourly rainfall occurred less frequently than usual. The most noteworthy instances will be found in the accompanying table of meteorological data. The maximum amounts fell, generally, on the twenty-second and twenty-sixth; the averages for the State on those days, however, being but 0.39 inch, and 0.36 inch, respectively. The average precipitation at twenty-seven stations possessing records for previous years was 1.12 inches below the normal amount; deficiencies being reported at all stations. At Angelica, Setauket and Rochester the totals were the smallest obtained during the respective periods of observation.

The average number of days on which the precipitation amounted to 0.01 inch or more was 8.5. The number was in excess of the general average on the Northern and Eastern plateaus, and in the St. Lawrence, Mohawk and Hudson valleys, and the Great Lake region. The average number of clear days was 10.4; of partly cloudy days, 11.7; and of cloudy days, 7.9. The average cloudiness for the State was 49 per cent (overcast = 100 per cent). The amount of cloud was above the general average over the plateau regions and in the Hudson valley.

The prevailing direction of the wind was from the south. The average total wind travel at six stations of the National Bureau and at Ithaca was 5,338 miles, being in excess of the usual

values for June in the eastern part of the State, and nearly normal in the western section.

Thunderstorms were reported on the first at Eden Centre; on the second at Eden Centre and Varysburgh; on the third at six stations in western New York and at Malone; on the fourth at ten stations in central, northern and eastern New York and at Eden Centre; on the fifth at Eden Centre, Ithaca, Baldwinsville and Lebanon Springs; on the sixth at two stations near the western, and two near the eastern borders; on the tenth at Wedgewood; on the eleventh at twelve stations of all sections excepting the Atlantic coast; on the fifteenth at six stations of central, northern and eastern New York; on the sixteenth at four stations of the western section; on the seventeenth at seven stations of the western section; on the twentieth at South Canisteo; on the twenty-first at thirteen stations of all sections excepting the Atlantic coast; on the twenty-second at ten stations in the southern tier of counties, including Long Island; on the twenty-fifth at sixteen stations of all sections excepting the coast; on the twenty-sixth at nine stations of the western, northern and central sections; on the twenty-ninth at Turin and Lebanon Springs, and on the thirtieth at seven stations of the northern and eastern sections.

A severe hail storm occurred in northern and eastern New York on the eleventh. Hail also fell at Ithaca on the twenty-second, and at Number Four on the thirtieth.

No frosts were reported during the month.

Solar halos were observed on the third, seventh and ninth.

The data for this summary have been obtained from the records of fifty-nine Voluntary Observers, six stations of the National Bureau, five Military Posts and fifteen Special Rainfall Observers.

During June the weather of New York was influenced by six areas of high and nine areas of low pressure; the number of the latter being somewhat greater than the average for June of previous years. In general the depressions developed but slight intensity, and the prevailing weather conditions were determined more by anticyclonic than cyclonic areas; the mean pressure being above the average value. Six broad trough-like

depressions passed over the State on the second, sixth, eleventh, sixteenth, twenty-second and twenty-sixth; one "low" passed eastward over Canada on the tenth; and two cyclones of greater energy than the preceding moved northeastward along the Atlantic coast on the eighteenth and twenty-second. The depressions were accompanied by thunderstorms rather than by general rains; the "low" of the eleventh causing the severest disturbance in the interior of the State, high winds and hailstorms occurring at many stations, while in the Coast region gales and violent thunderstorms accompanied the cyclone of the twenty-second. The anticyclones in most cases passed over the northeastern States to the coast, where they lingered a day or more, gradually moving southward. High pressure systems covered the eastern States during the greater part of the period between the first and the twenty-first, giving much bright dry weather; the rainfall and cloudiness increasing during the latter part of the month.

The temperature was above the normal almost continuously until the twenty-third, but the last week of June was slightly cooler than usual. There was very little frost or unseasonably cold weather during the month. A severe heated term occurred on the nineteenth, twentieth and twenty-first, the maximum temperatures being generally recorded in the southeastern section of the State.

Dry, warm weather during the early part of the month had a very beneficial effect in the advancement of crops and farm work, which were in a backward condition at the close of May. By the tenth corn and potato planting were practically completed and haying was under way in the southeastern section. At this time the effects of drouth began to be felt in the vicinity of the coast, and by the third week had injured farming interests in the Hudson valley, on Long Island and near the Central Lakes. The copious showers which occurred later were very unevenly distributed, and at the end of the month the southeastern and northeastern counties, and those bordering Lake Ontario were still greatly in need of rain. Corn was in many cases kept in a backward condition by the cool nights of the last week.

## METEOROLOGICAL DATA

LOCATION OF STATIONS.			BAROMETER.						HUMIDITY.		TEMP.		
STATIONS.	County.	Elevation (feet).	Mean.	Highest.	Date.	Lowest.	Date.	Monthly range.	Mean relative.	Dew point (degrees).	Mean of tri-daily observations.	Mean of maximum and minimum.	Highest.
<i>Western Plateau.</i>													
Alfred Centre	Allegany	1324										67.6	96
Angelica	"	1340									65.6	65.6	91
Friendship	"	1550							69	55	65.0	66.1	92
Humphrey	Cattaraugus	1950							80	60	66.4	66.4	87
<i>Central Plateau.</i>													
Arkwright	Chautauqua	1260										65.5	88
Elmira	Chemung	868									71.6	*71.6	
Le Roy	Genesee	888										69.5	91
Mt. Morris	Livingston	625							81	62		67.8	92
<i>Eastern Plateau.</i>													
Lockport	Niagara	616										69.3	92
Victor	Ontario	650										71.4	96
Wedgewood	Schuyler	1350									66.6	66.6	91
Addison	Steuben	1000									67.1	67.7	93
South Canisteo	Steuben	1480									64.6	65.5	92
Arcade	Wyoming	1537									65.8	65.3	88
Varysburg	"											67.1	91
Italy Hill	Yates	1650											
<i>Adirondack Plateau.</i>													
Binghamton	Broome	870							78	61	68.0	67.3	96
Oxford	Chenango	1250										67.7	89
Cortland	Cortland	1120										69.0	93
<i>Adirondack Plateau.</i>													
South Kortright	Delaware	1700										65.7	92
Brookfield	Madison	1350									66.2	66.5	91
Middletown	Orange	680										68.1	94
Port Jervis	"	470										68.6	93
<i>Adirondack Plateau.</i>													
Cooperstown	Otsego	1300									66.0	66.1	84
New Lisbon	"	1234									68.1	65.2	91
Quaker Street	Schenectady	973										67.0	87
Perry City	Schuyler	1038									66.2	67.9	94
<i>Adirondack Plateau.</i>													
Waverly	Tioga	825							65	58	69.2	69.2	96
Newfield Summit	Tompkins											67.0	87
Minnewaska	Ulster	1800									64.9	66.7	92
<i>Northern Plateau.</i>													
Lyon Mountain	Clinton	1917										65.5	92
Keene Valley	Essex	1015											
Ampersand	Franklin	1600									65.4	65.1	89
<i>Adirondack Plateau.</i>													
Gloversville	Fulton	802									66.6	67.0	93
Blue Mt. Lake	Hamilton												
Bisby Lodge	Herkimer											64.2	64.8
Constableville	Lewis	1246											
<i>Adirondack Plateau.</i>													
Lowville	Lewis	900										66.9	91
Number Four	"	1571							79	56	68.2	64.5	85
Turin	"	1240										64.5	85
<i>Coast Region.</i>													
New York city	New York	185	90.02	90.31	8	29.68	2	0.68	76	59		67.8	97
Willet's Point	Queens											69.0	96
Brentwood	Suffolk	75										68.2	97
Setauket	"	40							85	61	65.4	66.6	93
<i>Hudson Valley.</i>													
Albany	Albany	85	80.00	80.31	8	29.68	21	0.68	74	60		68.9	96
Lebanon Springs	Columbia	890										70.0	96
Honeynead Brook	Dutchess	450									66.6	65.3	90
												67.2	94

## STATE METEOROLOGICAL BUREAU.

135

FOR JUNE, 1893.

TEMPERATURE — (IN DEGREES FAHR.).										SKY.		PRECIPITATION — INCHES.						WIND.	
Date.	Lowest.	Date.	Monthly range.	Mean daily range.	Greatest daily range.	Date.	Least daily range.	Date.	Number of clear days.	No. of partly cloudy days.	Number of cloudy days.	Number of days on which 0.01 or more inches fell.	Total.	Greatest rainfall.	Duration.	Date.	Total snow fall.	Prevailing direction.	
20	39	24	46	24	42	20	2	27	13.3	9.9	6.8	8.4	3.04	2.44	13	0	26	S. W.	
20	45	4	46	21	31	2	2	27	7	15	8	3	1.93	1.00	...	...	22	S. W.	
20	40	8	50	25	39	8	12	6	14	9	7	9	2.35	0.69	...	...	26	S. W.	
20	41	8	51	27	42	20	11	27	9	13	8	8	2.04	0.55	11	15	26	S. W.	
20	45	12	42	21	33	8	6	26	9	12	9	12	4.54	1.26	...	...	26	S. W.	
a	50	7	33	13	20	3	5	26	...	...	...	...	...	...	...	...	...	...	
20	48	7	43	22	30	8	13	ac	13	13	4	6	3.62	1.28	...	...	26	S. E.	
20	44	8	48	33	41	30	15	6	9	11	10	6	0.50	0.16	...	...	26	S. W.	
20	48	7	44	22	34	24	11	ad	14	13	3	6	2.54	0.88	...	...	4	S. W.	
20	47	7	49	24	41	13	17	6	14	11	5	8	4.69	2.55	14	0	26	N. W.	
19	48	4	43	25	34	8	11	2	16	10	4	10	5.51	2.44	13	0	26	S. W.	
20	46	10	47	24	39	20	8	2	18	8	4	9	3.04	1.15	13	0	22	S. W.	
20	42	8	50	26	39	20	7	27	17	4	9	11	4.78	2.10	21	35	21	N. W.	
20	39	24	49	24	37	24	5	26	11	11	8	13	3.63	0.80	2	0	3	...	
20	46	n	45	25	35	24	11	26	14	8	8	8	3.08	1.21	...	...	3	...	
20	37	m	47	23	45	8	5	27	12.2	9.9	7.9	9.3	2.67	2.63	...	...	22	...	
b	45	8	44	24	38	20	12	2	14	8	8	11	2.58	0.51	...	...	21	S. E.	
20	44	8	49	26	39	8	14	2	14	10	6	11	3.70	1.35	21	0	22	W.	
20	48	8	38	19	26	8	12	ae	...	...	...	7	1.45	0.86	...	...	22	...	
20	37	8	55	30	45	8	18	...	...	...	...	8	5.76	2.63	...	...	22	S.	
20	37	1	54	24	40	8	8	26	13	7	10	8	0.77	0.18	...	...	22	S.	
20	50	p	44	19	31	11	6	16	12	11	7	...	...	...	...	...	...	...	
20	48	29	45	20	33	10	5	27	10	10	10	11	3.79	0.86	1	0	21	N. W.	
c	43	8	41	18	32	8	6	26	10	13	7	11	2.20	0.63	1	0	25	S.	
20	39	8	52	25	40	8	8	26	11	9	10	10	1.97	0.99	...	...	22	S.	
20	45	8	49	26	40	9	10	6	13	10	7	9	2.13	0.71	1	0	26	S. W.	
20	44	8	52	25	44	20	8	6	18	11	6	11	1.97	0.89	15	0	26	W.	
20	47	7	40	20	38	19	11	bb	...	...	...	5	3.05	...	...	...	...	...	
20	48	17	44	20	38	19	11	...	...	...	...	...	...	...	...	...	...	...	
18	41	8	44	22	39	18	4	26	8.4	11.6	10.0	9.2	3.20	1.33	2	58	21	...	
20	44	7	45	22	32	u	10	23	...	...	...	6	3.12	2.02	...	...	11	...	
18	43	8	49	24	39	18	4	26	11	8	11	10	1.95	0.56	0	58	4	W.	
21	44	8	43	21	31	8	10	4	12	7	11	7	2.93	0.90	3	0	6	S.	
20	44	24	47	24	32	v	10	4	6	16	8	10	1.90	0.49	...	...	22	W.	
20	41	8	44	20	34	8	7	6	5	14	11	10	5.03	1.33	2	58	21	W.	
20	46	8	39	19	28	8	10	4	8	13	9	12	4.25	1.32	1	20	29	W.	
d	44	29	46	18	32	w	4	bc	10.0	9.7	10.3	6.8	1.48	1.03	...	...	6	...	
20	53	2	43	15	28	10	4	26	6	16	8	8	2.56	1.03	...	...	6	N. E.	
18	51	28	46	18	27	18	4	26	...	...	...	7	1.96	0.60	0	30	4	N. E.	
20	44	29	53	22	32	w	5	23	14	6	10	5	0.80	0.40	6	0	26	S. W.	
20	50	2	43	16	26	x	4	23	10	7	13	7	0.58	0.27	9	35	26	E.	
20	40	8	49	22	44	30	3	26	9.3	14.2	6.5	8.0	2.24	1.07	16	0	22	...	
20	51	8	45	20	34	10	3	26	10	14	6	9	2.92	1.06	...	...	6	S.	
20	40	8	50	24	44	30	8	bd	17	7	6	8	2.67	1.07	16	0	22	W.	
20	46	8	48	22	34	y	4	26	8	11	11	10	1.88	0.60	1	10	25	S. W.	



## METEOROLOGICAL DATA

LOCATION OF STATIONS.			BAROMETER.						HUMIDITY.		TEMP.		
STATIONS.	County.	Elevation, feet.	Mean.	Highest.	Date.	Lowest.	Date.	Monthly range.	Mean relative	Dew point (degrees).	Mean of tri-daily obser- vation.	Mean of maximum and minimum.	Highest.
<i>Hudson Valley—(Con)</i>													
Poughkeepsie	Dutchess	180										68.5	98
Wappinger's Falls	"											70.5	97
West Point	Orange	167										70.2	98
Boyd's Corners	Putnam	546											
Carmel	Putnam	500											
Stillwater	Saratoga									69.4		70.5	98
Rondout	Ulster	150											
<i>Mohawk Valley</i>													
Rome	Oneida	445										68.8	98
Utica	"	537							88	61		68.9	97
												68.8	98
<i>Champlain Valley</i>													
Plattsburgh Barracks	Clinton	125										66.3	90
Fort Henry	Essex											66.3	90
Glens Falls	Warren	340											
Whitehall	"												
<i>St. Lawrence Valley</i>													
Malone	Franklin	810									67.7	68.9	98
Madison Barracks	Jefferson	266										66.6	98
Watertown	"	486	29.90	30.16	7	29.57	22	0.59				69.1	98
												69.6	90
Canton	St Lawrence	304									68.1	69.8	90
North Hammond	"	300									68.4	70.9	96
Ogdensburg	"	258									67.2	68.7	85
Potsdam	"	300									67.6	67.9	87
<i>Great Lakes</i>													
Dunkirk	Chautauqua	690										68.4	98
Buffalo	Erie	690	29.97	30.27	8	29.57	22	0.70	75	59		68.9	97
Eden Centre	"	690										67.0	98
												68.6	98
Brockport	Monroe	520											
Rochester	"	621	30.01	30.28	8	29.61	22	0.67	68	58		71.0	98
Fort Niagara	Niagara	263										69.0	98
Hess Road Station	Niagara	330											
Baldwinsville	Onondaga	390									68.9	71.0	91
Albion	Orleans	521											
Oswego	Oswego	304	29.98	30.27	8	29.53	22	0.69	73	57		68.0	94
Palermo	"	460							72	59	68.1	68.5	93
Lyons	Wayne	407											
Erie, Pa	Erie	681	29.98	30.27	8	29.60	22	0.67	73	59		68.0	98
<i>Central Lakes</i>													
Fleming	Cayuga	1000									69.6	69.0	98
Geneva	Ontario	459									68.4	69.8	96
Watkins	Schuyler	737										69.2	98
Romulus	Seneca	300							83	61		70.0	98
Ithaca	Tompkins	840	29.97	30.26	8	29.58	22	0.68			68.2	68.9	93
Mean			29.99	30.31	8	29.57	22	0.67	75	59		67.9	99

\* Mean of the tri-daily observations. † Mean of the maximum and minimum by the four hours.

(a) 8, 20; (b) 18, 19; (c) 5, 20, 21; (d) 18, 20; (e) 16, 21; (f) 20, 21; (g) 15, 20; (h) 19, 20; (i) 30; (j) 9, 30; (k) 9, 18, 29, 30; (l) 5, 18; (m) 5, 10, 18, 19; (n) 10, 20; (o) 8, 10; (p) 10, 29; (q) 4

FOR JUNE, 1893 — (Concluded).

TEMPERATURE — (IN DEGREES FAHR.).										SKY.			PRECIPITATION — (INCHES).					WIND.	
Date.	Lowest.	Date.	Monthly range.	Mean daily range.	Greatest daily range.	Date.	Least daily range.	Date.	Number of clear days.	No. of partly cloudy days.	Number of cloudy days.	Number of days on which 0.01 or more inches fell.	Total.	Greatest rainfall.	Duration.†	Date.	Total snow fall.	Prevailing direction.	
20 42 8	56	25 38	aa 25	25	38	25 38	25 38	25 38	6	17	7	9	1.49	0.53	H. M.	23		E.	
20 51 2	46	21 26	21 26	21	26	21 26	21 26	21 26	12	13	5	12	2.09	0.42	18 30	26			
20 48 27	51	21 38	21 38	21	38	21 38	21 38	21 38	10			6	1.33	0.68	17 0	23			
20 48 8	45	21 39	21 39	21	39	21 39	21 39	21 39	5	9	3	23	2.61	1.02	17 0	22		E.	
20 45 8	43	22 38	22 38	22	38	22 38	22 38	22 38	12	13	6	17	2.07	1.01		22			
20 48 8	39	19 26	19 26	19	26	19 26	19 26	19 26	12	13	6	17	1.79	0.88		22			
20 45 8	47	24 35	24 35	24	35	24 35	24 35	24 35	13	16	6	17	2.35	1.01		22		W.	
20 50 9	40	19 30	19 30	19	30	19 30	19 30	19 30	8	22		7	2.42	0.97	21 0	12		S.	
20 50 9	40	19 30	19 30	19	30	19 30	19 30	19 30	8	22		7	2.42	0.97	21 0	12		S.	
15 47 25	40	21 39	21 39	21	39	21 39	21 39	21 39	6	10.3	12.2	7.5	2.86	1.42		6			
20 47 25	38	18 29	18 29	18	29	18 29	18 29	18 29	10	6	9	7	2.26	0.86	14 0	11		S. W.	
22 49 7	39	19 28	19 28	19	28	19 28	19 28	19 28	6	6		10	1.66	0.52	2 0	6		S. W.	
22 48 7	42	22 29	22 29	22	29	22 29	22 29	22 29	12	6	7	17	2.83	1.42		6		S.	
15 50 7	40	23 31	23 31	23	31	23 31	23 31	23 31	9	11	12	9	3.05	0.94		6			
15 45 7	51	22 39	22 39	22	39	22 39	22 39	22 39	12	4	6	16	1.96	0.49		6			
5 51 8	34	19 25	19 25	15	26	15 26	15 26	15 26	12	26	15	9	2.20	0.59	13 15	20		S. W.	
21 48 7	39	21 31	21 31	21	31	21 31	21 31	21 31	11	13	15	2	5.00	1.35	5 0	26		S. W.	
3 40 6	41	18 40	18 40	18	40	18 40	18 40	18 40	8	26	12.6	7.3	9.6	2.60	1.80	4 30	16		
19 49 12	30	12 21	12 21	24	25	12 25	12 25	12 25	8	26	13	6	11	3.40	0.73		16		
15 53 11	32	14 25	14 25	15	25	14 25	14 25	14 25	6	11	8	19	11	1.65	0.61		2		S. W.
3 40 6	58	25 40	25 40	25	40	25 40	25 40	25 40	12	26	15	8	12	4.86	1.80	4 30	16		S. W.
20 51 7	41	20 29	20 29	20	29	20 29	20 29	20 29	9	26	15	4	11	0.94	0.31			S. E.	
20 51 11	41	18 28	18 28	18	28	18 28	18 28	18 28	7	27		6	2.02	0.84	3 10	22		S. W.	
20 51 7	40	21 29	21 29	21	29	21 29	21 29	21 29	12	2	16	4	10	2.87	0.54		5		N. W.
19 46 12	38	17 27	17 27	17	27	17 27	17 27	17 27	10	26	12	7	11	2.20	0.93		22		S.
20 46 24	47	24 38	24 38	24	38	24 38	24 38	24 38	13	11	15	1	14	2.26	1.05	7 30	22		S. E.
20 51 13	38	14 21	14 21	24	24	14 24	14 24	14 24	8	10	7	14	9	3.20	1.80		25		W.
20 40 1	47	23 36	23 36	23	36	23 36	23 36	23 36	4	6	11.7	13.7	4.6	2.02	1.45	16 0	26		
5 50 7	39	19 28	19 28	19	28	19 28	19 28	19 28	4	6	5	24	1	1.32	0.80	1 30	25		S.
20 40 1	56	25 36	25 36	25	36	25 36	25 36	25 36	1	10	6		7	3.13	1.45	16 0	26		
20 49 24	45	24 35	24 35	24	35	24 35	24 35	24 35	13	11	6		2.41					S. W.	
20 49 7	47	24 38	24 38	24	38	24 38	24 38	24 38	10	6	17	10	3	1.41	0.58	1 05	26		S.
20 46 8	47	22 38	22 38	22	38	22 38	22 38	22 38	8	10	27	13	7	2.21	0.60	19 20	21		S. E.
20 37 m	44	21 45	21 45	21	45	21 45	21 45	21 45	2	27	10.4	11.7	7.9	2.46	2.63		22		S.

Draper thermograph. † Report received too late to be used in computing means. The means  
 † Blank means that the duration is not shown in the original records, but is within twenty.

20; (j) 7, 8, 28; (k) 8, 28; (m) 1, 8; (n) 7, 24; (p) 1, 8, 29; (q) 25, 29; (r) 7, 24; (s) 6, 7; (t) 19, 20,  
 6, 25; (ad) 11, 26; (ae) 2, 6, 27; (bb) 26, 27; (bc) 23, 26; (bd) 26, 29; (cc) 2, 6.

## DAILY AND MONTHLY MEAN

STATION.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<i>Western Plateau</i> ..	64	69	73	73	74	66	59	64	68	71	65	62	64	70
Alfred Centre .....	60	66	71	73	74	63	56	63	70	71	63	61	59	68
Angelica .....	64	70	74	74	72	68	56	60	64	70	66	58	58	65
Friendship .....	61	70	71	74	72	66	61	62	65	71	64	60	62	76
Humphrey .....	64	69	71	72	74	66	59	64	70	74	60	60	60	68
<i>Arkwright</i> † .....	63	68	73	70	69	63	57	64	66	70	62	58	62	69
Elmira* .....	67	70	73	79	76	70	67	69	73	74	70	66	72	75
LeRoy .....	66	72	76	72	75	68	59	69	70	72	62	62	66	70
Mount Morris .....	64	72	73	72	72	68	59	64	68	70	65	61	64	69
<i>Lockport</i> .....	65	74	75	73	73	69	61	67	68	68	60	67	64	69
Victor .....	67	70	73	74	78	66	60	72	75	72	66	65	72	73
Wedgewood .....	62	66	73	74	78	64	60	65	72	73	65	64	70	71
Addison .....	61	68	72	76	74	66	62	64	68	70	70	64	66	70
<i>South Canisteo</i> .....	62	66	72	74	72	65	58	60	66	70	69	61	60	66
Arcade .....	63	68	73	70	72	63	55	61	64	68	64	58	61	69
Varysburg .....	65	73	75	71	73	61	58	63	68	70	64	61	61	68
Italy Hill .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
<i>Eastern Plateau</i> ..	61	64	70	72	74	70	61	62	66	71	71	63	67	70
Binghamton .....	62	66	72	74	74	68	61	60	66	72	72	64	66	70
Oxford .....	61	65	72	76	75	74	62	64	66	72	74	64	68	75
Cortland† .....	62	65	72	72	72	67	59	51	66	70	72	62	68	69
South Kortright ..	62	64	70	72	72	63	60	60	64	69	68	60	67	68
<i>Brookfield</i> .....	56	66	70	73	72	67	58	61	65	70	68	62	67	69
Middletown .....	60	62	65	70	76	76	65	63	68	75	73	64	66	71
Port Jervis .....	63	64	65	72	76	76	66	64	66	70	74	66	67	72
Coopers town .....	62	66	72	72	73	66	58	59	66	69	69	58	65	67
New Lisbon .....	60	63	70	72	71	65	58	59	63	68	70	60	67	67
<i>Quaker Street</i> ..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Perry City .....	63	67	72	75	73	66	62	63	67	72	63	61	68	70
Waverly .....	62	67	72	77	74	71	63	63	67	74	71	72	70	70
Newfield Summit ..	61	68	.....	70	74	65	56	68	69	71	67	62	64	75
Minnewaska .....	60	69	66	66	75	73	64	67	70	74	73	63	63	73
<i>Northern Plateau</i> ..	61	63	69	69	72	67	58	60	65	67	66	60	64	67
Lyon Mountain .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Amersand .....	62	63	63	63	72	66	59	62	66	68	66	62	69	70
Gloversville .....	64	64	70	66	72	71	61	61	66	68	72	62	69	70
<i>Constableville</i> ..	58	62	68	70	70	64	56	60	62	66	66	61	64	65
Lowville .....	61	62	72	70	74	69	62	62	65	69	64	62	65	68
Number Four .....	62	64	71	69	73	68	54	58	66	67	61	58	64	66
Turin .....	59	62	68	69	72	63	56	60	64	66	64	59	64	66
<i>Coast Region</i> .....	62	60	66	67	75	77	66	66	66	71	75	67	66	68
New York City .....	61	60	66	68	78	78	70	68	68	73	80	67	65	70
Willet's Point .....	62	62	71	69	78	76	62	64	67	74	63	68	74	60
Brentwood .....	65	60	68	68	72	76	66	66	67	68	76	64	62	73
Setauket .....	60	58	59	64	73	78	66	65	62	69	76	69	64	68
<i>Hudson Valley</i> .....	65	63	71	70	76	77	65	62	69	72	75	67	70	73
Albany .....	64	65	72	71	78	77	66	66	71	74	76	64	72	74
Lebanon Springs .....	59	62	68	72	72	75	60	51	66	67	72	66	68	74
Honeymead Brook ..	64	62	72	69	75	76	62	62	66	70	74	66	67	72
<i>Poughkeepsie</i> .....	63	61	71	69	75	77	64	61	66	71	75	66	70	72
Wappingers Falls ..	66	64	73	72	78	79	69	64	70	73	80	68	70	75
West Point .....	63	62	71	68	76	78	70	67	68	72	77	72	70	74
Boyd's Corners .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Carmel .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
<i>Stillwater</i> .....	72	65	70	72	77	76	63	64	78	77	74	64	72	74
Rondout .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Peekskill .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
<i>Mohawk Valley</i> .....	69	68	68	74	72	73	60	60	68	74	70	66	68	70
Rome .....	72	70	62	74	70	76	62	58	67	73	69	67	67	70
Utica .....	66	65	74	74	73	70	58	63	70	75	72	64	68	71

## TEMPERATURES FOR JUNE, 1893.

15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	Monthly mean.
71 69 71 70	70 67 69 71	71 70 72 70	72 73 70 71	73 72 68 70	75 75 70 71	74 72 70 71	73 72 70 73	63 60 60 61	64 63 60 62	65 61 62 61	62 60 60 58	62 59 58 62	62 59 62 62	63 59 60 59	64 60 61 63	67.6 65.6 65.5 66.1 66.4
70 72 71	67 72 73 70	67 76 73 70	69 80 74 71	72 79 74 72	74 81 74 74	71 77 77 75	66 73 74 76	62 66 64 64	65 69 66 64	64 66 72 68	58 67 66 64	60 62 64 66	61 64 64 64	62 67 66 64	62 69 66 68	65.5 71.6 69.5 67.8
70 76 75	67 74 74 70	72 74 70 71	74 75 75 74	76 78 76 73	78 82 78 74	75 81 76 76	75 76 73 73	67 65 64 64	68 70 66 64	70 74 66 64	66 61 65 59	67 65 59 59	67 66 62 58	68 68 64 60	68 71 66 64	69.3 71.4 69.3 67.7
68 69	66 78	68 69 71	70 69 71	70 69 72	72 78 74	72 72 72	72 69 74	62 60 64	61 57 64	62 58 67	62 57 61	60 64 64	58 61 59	60 63 66	61 63 65	65.5 65.3 67.1
73 73 72 71	70 69 74 72 70	66 69 71 65	71 72 70 68	73 72 74 68	76 73 74 73	74 73 75 72	71 76 76 70	64 64 66 61	64 63 64 61	65 64 66 61	64 64 67 60	60 62 62 60	61 62 64 60	61 64 63 58	65 64 66 61	67.3 67.7 69.0 67.1 65.7
72 72 74 72 70	66 66 70 70 70	68 60 61 65	70 70 71 68	76 78 75 70	79 83 78 73	72 78 76 72	66 66 72 67	60 66 67 61	65 66 66 60	64 66 69 61	63 60 59 61	60 60 62 60	63 61 62 60	56 63 62 54	68 68 66 63	66.5 68.1 68.6 66.1 65.2
71 75 71 77	71 70 70 66	70 72 61 54	72 74 72 66	72 75 72 70	76 74 76 81	75 77 74 72	75 77 71 65	63 67 64 61	65 64 ..... 67	65 62 ..... 67	69 66 68 59	60 60 55 58	59 61 80 65	62 62 64 61	64 66 71 66	67.9 69.2 67.0 66.7
71 76 70 69 66	70 68 70 68 66	67 66 70 66 66	69 70 68 68 68	70 72 70 70 70	75 76 76 82 81	73 74 74 72 76	68 66 62 67 68	63 59 62 63 60	62 59 62 60 60	61 62 64 64 60	61 58 64 61 60	61 60 65 60 62	62 58 66 61 62	62 62 63 61 62	63 64 65 61 62	65.5 65.1 67.0 64.8 66.9 64.5 64.5
70 73 74 72 62	65 64 73 60 62	64 59 81 58 56	76 73 84 75 71	78 82 78 78 75	79 84 70 82 81	76 83 64 80 76	70 66 70 72 68	64 66 68 60 66	68 70 68 68 66	66 67 70 68 64	58 57 58 60 58	60 62 60 58 60	60 62 58 60 62	60 62 58 60 64	64 66 71 68 69	69 71 68.2 67.5 66.6
75 79 74 73	70 72 65 66	61 64 54 50	71 73 64 70 74	75 78 75 70 74	81 84 70 82 81	77 79 74 77 75	69 68 66 62 66	64 64 59 62 62	65 68 60 62 62	65 68 62 62 62	62 61 62 59 60	61 62 63 60 65	63 64 65 60 65	66 68 69 62 62	68 72 64 65 65	68.9 70.0 65.3 67.3
74 76 74	70 69 71	60 60 66	70 70 74	77 77 78	80 84 80 77	76 80 80 78	74 69 80 70	68 65 66 66	63 66 66 66	62 67 66 66	64 62 63 63	71 63 66 63	62 64 62 64	62 71 64 64	65 71 64 64	68.5 70.5 70.2
78 78	76 76	65 65	72 74	74 74	80 80	78 78	69 68	62 62	66 66	65 65	64 64	62 62	65 65	67 67	75 75	70.5
73 72 74	72 74 70	68 68 69	70 69 71	72 71 74	76 77 77	76 76 76	72 76 76	64 66 66	64 62 66	66 66 66	64 68 68	66 67 66	66 65 68	68 68 68	68 67 69	68.8 68.9 68.8

## DAILY AND MONTHLY MEAN

STATION.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<i>Champlain Valley.</i>	61	62	64	68	70	70	62	64	64	70	64	58	63	70
Plattsburgh Barracks.	61	62	64	68	70	70	62	64	64	70	64	58	63	70
Glens Falls.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
<i>St. Lawrence Valley.</i>	67	69	73	71	73	65	58	66	70	71	60	63	69	73
Malone.....	64	65	66	71	72	67	57	66	70	70	61	55	66	70
Madison Barracks.	69	71	73	69	72	65	58	70	72	70	62	64	70	70
Watertown.....	67	70	76	73	74	67	58	64	70	72	63	62	70	73
Canton.....	66	72	76	74	76	67	60	67	69	72	60	64	68	73
North Hammond.	70	71	76	72	72	70	52	60	69	74	58	63	74	80
Ogdensburg.....	66	70	71	69	71	60	60	66	68	68	59	65	71	73
Potsdam.....	66	60	73	70	73	66	58	70	68	68	58	62	66	72
<i>Great Lakes</i>	67	72	75	74	74	63	59	66	71	69	60	60	64	70
Dunkirk †.....	68	72	71	72	67	60	58	62	68	69	62	53	64	68
Buffalo.....	69	72	74	64	68	60	58	64	67	66	55	60	66	71
Eden Centre.....	69	75	84	82	77	55	57	61	72	80	53	60	60	77
Brockport.....	64	74	76	76	78	64	61	66	74	76	60	.....	.....	.....
Rochester.....	67	74	78	74	76	68	62	70	72	72	64	63	66	72
Fort Niagara.....	65	73	68	70	75	68	63	68	70	70	58	64	62	64
Hess Road Station.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Baldwinsville.....	70	71	78	76	80	64	60	71	74	66	65	65	71	73
Albion.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Oswego.....	66	68	74	72	71	62	56	64	70	64	62	54	64	69
Palermo.....	65	67	71	75	75	66	58	69	70	74	60	60	66	70
Lyons.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Erie, Pennsylvania.	70	74	76	74	72	66	61	65	70	70	60	60	59	69
<i>Central Lakes</i>	62	66	73	75	75	68	62	65	70	72	68	63	70	71
Fleming.....	63	65	74	75	78	70	64	66	72	71	65	60	74	67
Geneva.....	58	64	72	76	76	67	62	66	71	71	70	65	70	75
<i>Watkins</i>	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Romulus.....	62	68	74	74	71	69	61	66	65	74	66	64	68	70
Ithaca.....	63	68	72	76	74	68	61	62	70	74	70	63	68	72
Monthly means	68.9	65.6	70.4	71.3	73.5	69.6	61.0	63.5	67.7	70.8	67.4	62.9	66.5	70.2

\* Means of tri-daily observations. † Mean of the maximum and minimum by the Draper and minimum of the ordinary self-registering thermometers. The means from the tri-daily reports received too late to be used in computing averages.

# STATE METEOROLOGICAL BUREAU.

## TEMPERATURES FOR JUNE, 1893 — (Concluded).

15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
72 73	67 67	66 66	70 70	73 73	80 80	74 74	70 70	60 60	61 61	61 61	65 65	64 64	63 63	60 60	70 70
74 73 70 73	69 66 74 76	70 66 70 71	73 70 70 72	72 68 71 71	76 75 74 74	76 72 74 76	74 71 78 78	66 62 67 66	66 62 67 66	67 62 67 67	68 66 71 67	68 64 70 67	67 64 66 66	68 65 70 67	69 68 67 68
74 80 73 74	69 68 67 64	72 73 71 67	74 78 73 72	72 77 73 70	77 80 76 75	78 79 73 76	74 78 70 71	67 72 65 64	64 72 68 64	65 68 67 72	69 68 68 66	68 72 69 73	68 70 70 64	68 74 70 66	72 70 70 68
71 68 72 80 70	71 65 72 70 74	71 65 71 72 72	71 68 69 70 75	73 70 71 70 78	76 68 75 76 81	75 71 72 80 78	72 63 70 63 76	65 64 63 68 65	67 66 70 65 60	68 66 69 63 63	65 62 65 63 65	65 64 68 69 65	66 63 66 70 68	66 65 68 68 68	68 65 68 74 74
72 69	76 67	72 73	74 73	76 78	78 80	78 75	76 74	66 68	67 74	72 69	64 68	64 66	66 64	68 67	68 66
76	71	73	74	76	79	78	72	66	70	72	68	69	68	66	70
65 69	71 70	68 72	66 71	70 71	72 75	74 72	70 74	58 65	62 64	69 70	66 67	64 66	64 67	64 66	68 70
70	70	70	70	74	79	78	72	68	68	69	65	65	65	66	68
74 72 74	73 73 74	72 71 74	74 71 75	76 74 78	78 76 79	77 78 77	74 74 72	64 63 66	66 64 69	68 66 69	65 65 64	62 63 64	64 64 64	66 65 66	68 64 68
74 74	74 72	72 72	76 74	76 74	80 77	76 74	75 74	64 65	67 64	70 66	64 68	60 61	66 62	72 63	68 68
72.4	69.7	67.6	71.7	78.5	77.2	75.2	71.3	68.7	64.6	65.2	63.4	63.9	63.4	64.4	67

thermograph. Means for all stations not otherwise indicated are derived from the observations are derived by the formula (7 a. m. + 2 p. m. + 9 p. m. + 9 p.

## DAILY AND MONTHLY PRECIPITA

STATIONS.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<i>Western Plateau..</i>	0.01	0.11	0.08	0.12	0.10	0.31	T.	0.00	0.00	0.01	0.09	T.	T.	0.00
Alfred Centre.....												T.		
Angelica.....	.08		.05		T.	.17								
Bolivar.....														
Friendship.....	T.		.10		T.	.10					T.	T.		
Humphrey.....		.02	.48		.04	.26					.20			
Little Valley.....														
Cherry Creek.....	T.	.04	.10	.03	.15	.13					.12	.01		
Elmira.....		.05			.10	.28								
Akron.....		1.18	T.	.68		.24					.15			
LeRoy.....			.05		.05	.15				.05	.04			
Avon.....				.17	.35	T.					T.			
Mt. Morris.....				.21	.31						.14			
Lockport.....		.40	T.	.88	T.	.20					.72			
Victor.....		T.	T.	.05	T.	.72	T.				.07		T.	
Wedgewood.....		.13			.35	.14					.01	T.		
Addison.....		.02	.07			.26								
Atlanta.....		.05	.01			.10					.10		T.	
Pine City.....					.30	.20								
South Canisteo.....		.08	.15		.10	.17					.15			
Arcade.....	T.	T.	.80	.04	.72	.25				.10	.05	T.		
Attica.....														
Castile.....	.01			.20	.13	.10					.08			
Varysburg.....														
<i>Eastern Plateau...</i>	0.02	0.05	0.00	0.18	0.12	0.23	0.00	0.00	T.	0.00	0.08	0.01	0.01	0.00
Binghamton.....	.25	.03		.25		.33							.03	
Chenango Forks.....						.35								
Oxford.....		.20			.05	.16					T.	T.	.06	
Cortland.....		.09				.16								
Deposit.....														
South Kortright.....				1.51		.53					.17	.86		
Brookfield.....				.05		.03						.03		
Apulia.....														
Middletown.....						.25								
Port Jervis.....		.08				.28			.07		.70	T.	.06	
Warwick.....														
Cooperstown.....		.01		.15		.25					.04	.04		
New Lisbon.....	.05			.03		.30					.08		.02	
Quaker Street.....														
Perry City.....		.14			.49	.16					.03			
Newark Valley.....	T.	.04			T.	.12								
Waverly.....	.02	.02			.02	.09								
Ellis.....		.10			1.06	.20					.04			
Newfield Summit.....														
Minnewaska.....				.50		.30							*	†.20
<i>Northern Plateau..</i>	T.	0.05	T.	0.25	0.00	0.33	0.00	0.00	0.00	0.00	0.65	0.15	0.01	0.00
West Chazy.....	T.	.08	.01	.27		.31					2.03	.55		
Au Sable Forks.....														
Keene Valley.....														
Ampersand.....			.03		*	†.72					1.30	.72		
Gloversville.....				.56		.02							.07	
Blue Mount'n Lake.....														
Bisby Lodge.....														
Constableville.....		.24		T.		.90					.34			
Lowville.....				.43		.17					.21	.08		
Number Four.....				.41		.31					1.23			
Turin.....		.04		.12		.41					.71			
Boonville.....		.07		.14		.48								
Galway.....														
King's Station.....				.36		.10						.06		

TION FOR JUNE, 1893 — (INCHES).

15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	Total.
0.00	0.09	0.10	T.	0.00	T.	0.40	0.42	0.05	T.	0.14	0.70	0.23	T.	0.00	T.	2.89
.....	.....	.34	.....	.....	.....	.....	1.00	.....	.....	.....	.59	.....	.....	.....	.....	1.98
.....	.....	.02	.....	.....	.....	.45	.84	.....	.....	.14	.69	.46	.....	.....	.....	2.35
.....	T.	T.	.....	.....	.....	.51	.10	.02	.....	.17	.55	.49	.....	.....	.....	2.04
.....	.04	.37	.....	.....	.....	.....	.22	.55	.....	1.00	1.26	.15	.....	.....	.....	4.54
.....	1.04	.02	.....	.....	.....	.37	T.	.....	.....	.47	.78	.82	.08	.....	.....	3.63
.....	.30	.....	.....	.....	.....	.90	.55	.10	.....	.04	1.28	.82	.....	.....	.....	3.62
.....	.....	.....	.....	.....	.....	T.	T.	.....	.....	.....	.22	.....	.....	.....	.....	2.77
.....	.....	.40	T.	.....	.....	T.	T.	.....	.....	.10	T.	T.	.....	.....	.....	0.50
.....	.10	T.	.....	.....	.....	.10	T.	.....	.....	.01	.20	.....	.....	.....	.....	1.02
.....	T.	.....	.....	.....	.....	T.	T.	.....	T.	.02	.24	.24	.....	.....	.....	0.87
.....	.....	.....	.....	.....	.....	.57	.10	.....	.....	.02	2.55	.01	.....	.....	.....	2.54
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4.09
.....	.....	.....	.....	.....	.....	1.39	.78	.04	.....	.....	2.44	.23	.....	.....	.....	5.51
.....	.....	.....	.....	.....	.....	.89	.64	.02	.....	.25	.80	.08	.....	.....	.....	3.04
.....	.....	.....	.....	.....	.....	.03	2.03	.....	T.	.....	.72	.....	.....	.....	.....	3.04
.....	.....	.....	.....	.....	.....	.53	1.12	.29	.....	.09	.20	.73	T.	.....	T.	3.47
.....	.....	.47	.....	.....	T.	2.10	.78	.....	.....	.13	.20	.45	.....	.....	.....	4.78
.....	.22	.02	.....	.....	.....	.20	.08	.....	.....	.16	.63	.26	.....	.....	.....	3.63
.....	.....	.22	.....	.....	.05	.....	.08	.....	.....	.10	.59	.....	.....	.....	.....	1.46
T.	0.03	0.06	0.00	0.00	0.00	0.35	0.70	0.08	0.00	0.15	0.50	0.04	T.	0.00	0.01	2.70
.....	.08	.06	.....	.....	.....	.06	.28	.....	.....	.20	.61	.....	.....	.....	.....	2.58
.....	.....	.....	.....	.....	.....	.75	.76	.....	.....	.35	1.00	.....	.....	.....	.....	3.21
.....	.....	.10	.....	.....	.....	.69	1.35	.48	.....	.05	.81	.....	.05	.....	.....	3.70
.....	.06	.....	.....	.....	.....	.18	.86	.....	.....	.06	.....	.04	.....	.....	.....	1.45
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	2.63	.....	.....	.61	.25	.....	.....	.....	.....	5.76
.....	.....	.....	.....	.....	.....	.05	.10	.24	.....	.05	.12	.....	.....	.....	.....	0.77
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	T.	.20	.....	.....	.....	.86	.61	.27	.....	.....	.61	.08	.....	.....	.....	3.79
.....	.12	.....	.....	.....	.....	.07	.52	.....	.....	.63	.20	.....	.....	.....	.17	2.20
.....	.....	.05	.....	.....	.....	.16	.99	.10	.....	.....	.19	.....	.....	.....	.....	1.97
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.06	.....	.....	.....	.....	.24	.17	.....	.....	T.	.71	.03	.....	.....	.....	2.13
.....	.04	.16	.....	.....	.....	.86	.83	.....	.....	.11	.60	.....	.....	.....	.....	1.76
.....	.01	.13	.....	.....	.....	.66	.10	.....	.....	.03	.53	.36	.....	.....	.....	1.97
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.10	.04	.....	.....	.....	.64	.44	.....	.....	.01	.83	.02	.....	.....	.....	3.48
.....	.....	.....	.....	.....	.....	*	*	11.50	.....	*	1.55	.....	.....	.....	.....	3.05
0.19	0.01	0.03	0.00	0.00	0.00	0.26	0.25	0.16	T.	0.14	0.13	0.03	T.	0.20	0.11	2.99
.....	T.	T.	.....	.....	.....	.....	.02	.34	T.	.....	.....	.....	.....	.....	.....	3.61
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	*	1.35	.....	.....	.....	.....	T.	.....	.....	.....	3.12
.....	.....	.....	.....	.....	.....	.46	.29	.14	.....	.03	.16	.20	.....	T.	.02	1.95
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.24	.....	.....	.....	.....	.....	.31	.....	.....	.36	.....	.....	.....	.54	2.93
.....	.....	.....	.....	.....	.....	.21	.49	.08	.....	.18	.....	.05	.....	.05	.....	1.90
.....	.11	.....	.....	.....	.....	1.33	.46	.....	.....	.11	.27	.....	.....	.38	.87	5.03
1.13	.....	.....	.....	.....	.....	.....	.08	.07	.....	.11	.24	.....	.02	1.32	.....	4.25
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.48	.11	.....	.....	.....	.....	.....	.45	.....	.77	.08	.04	.....	.06	.....	3.63
.....	.....	.....	.....	.....	.....	.08	.66	.06	.....	.04	.09	.....	.....	.....	.07	1.52



## DAILY AND MONTHLY PRECIPITA

STATIONS.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<i>Coast Region</i> .....	00.0	T.	0.01	0.13	T.	0.26	0.00	0.00	0.07	0.02	T.	T.	0.01	0.01
New York city .....	T.			T.	T.	1.03					T.	.01	.04	
Willet's Point .....			.05	.60						.05				.07
Brentwood .....						T.			.20		T.			
Setauket .....	T.		.03	T.		T.			.15	.05			T.	T.
Bedford .....				.06		.26					.01			
<i>Hudson Valley</i> ....	0.00	T.	0.00	0.32	T.	0.33	0.00	0.00	0.02	0.00	0.10	0.01	T.	T.
Albany .....				.48		1.06					.39			
Bethlehem Centre .....														
Lebanon Springs .....				.50		.31						.04		
Honeymead Brook .....	T.			.02	T.	.16					.02		T.	
Pawling .....														
Poughkeepsie .....				.01	.01	*	†.13				.05			
Wappinger's Falls .....	T.			.11	.02	.20					.19		.01	
West Point .....						.17					T.			T.
Boyd's Corners .....														
Carmel .....														
S. E. Reservoir .....														
Schoodack Depot .....														
Stillwater .....				1.00		.03					.28	.02		
Rondout .....				.11		.70								
Easton .....				.59		.13			.31					
<i>Mohawk Valley</i> ....	0.02	0.01	0.04	0.13	0.45	0.04	0.12	0.00	0.00	0.00	0.26	T.	0.02	0.00
Rome .....	.04		.08		.88		.23							
Utica .....	T.	.02		.26	.02	.06					.52	T.	.03	
<i>Champlain Valley</i> ..	0.00	0.12	0.00	0.16	0.60	0.37	0.00	0.00	0.00	0.00	0.00	?	?	0.00
Plattsb'h Barracks .....		.12		.16		.37						*	†.97	
Port Henry .....														
Glens Falls .....														
Whitehall .....														
<i>St. Lawrence Val.</i> ..	0.01	0.06	0.07	0.06	0.07	0.70	0.00	0.00	0.01	0.01	0.48	0.06	0.00	0.00
Malone .....		.23	.48	.19	.02	.33					.86	.25		
Madison Barracks .....		.01	.05	.01	.52	.18				.05	.06			
Watertown .....	T.	.06		.03		1.42					.12	.03		
Canton .....		.12				.94			.07		.90			
DeKalb Junction .....				.05		.75				.02	.27	.18		
North Hammond .....	.05	.03		.04		.66					.36			
Ogdensburg .....				.19		.59					.35			
Potsdam .....						.73			.05		.94			
<i>Great Lakes</i> .....	T.	0.13	0.03	0.05	0.13	0.33	0.02	0.00	T.	T.	0.21	0.01	0.00	0.01
Dunkirk .....	T.	.15	.13		.07	.20			T.		.08	.04		
Buffalo .....	T.	.61	.03	.09	T.	.12			T.		.11	T.		
Eden Centre .....	T.	.10	T.	T.	.02	.36					.64			
Adams Centre .....														
Brockport .....	T.			.16		.24					.10			
Rochester .....	T.	T.		.14	.31	.07	T.				.13	.03		
Fort Niagara .....		.44			T.	T.					.35			
Hess Road Station .....														
Baldwinsville .....	T.	.09	T.	.11	.54	.52				.03				.17
Albion .....														
Lyndonville .....														
Demster .....		.03		.03		.44					.32	.05		
Oswego .....	T.	.03	.03	.01	T.	.38				T.	.67			
Palermo .....					*	†.10					.10			
Phoenix .....		.13				1.25	.20				T.	.02		
Lyons .....														
Erie, Pennsylvania .....	.02	T.	.18	.01	.45	.07					.01			
<i>Central Lakes</i> ....	0.00	0.06	0.03	0.01	0.24	0.17	0.00	0.00	0.00	0.00	T.	0.00	0.00	0.00
Fleming .....		.10			T.	.19								
Geneva .....		.05	T.		.61	.18								
Watkins .....														

## 145

15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	Total
T.	T.	0.08	T.	0.06	0.00	0.09	0.06	0.16	0.00	0.08	0.88	0.04	T.	0.00	0.02	1.58
T.	T.	.16	T.	.38		.11	.09	.17			.89	.17	T.			2.56
						.05	.05	.05			.80					1.96
	T.	T.				.02	.03	.08		.10	.40				T.	0.80
T.						.25	.14	.57		T.	.27					0.58
										.05	.53	.02			.10	1.99
T.	0.00	0.13	0.00	0.00	0.00	0.30	0.42	0.31	0.00	0.14	0.27	0.01	0.00	0.03	0.13	2.40
		.05					.42	.36			.06	.15	.05			2.92
		.01					1.07									2.97
T.		.10				.04	.02	.33		.39	.48	T.			.11	1.88
T.		.33				.07	.02	.53		.35					T.	1.50
		.24				.10	.26	.35		T.	.42	.02			.07	2.09
		.41				.03	.21	.68			.33	T.				1.33
							1.02	.11			.05				.10	2.61
							* .34	1.10			1.00					2.91
						1.58	.84	.23							.60	3.68
0.00	0.14	T.	0.00	0.00	0.00	0.03	0.55	0.11	0.00	T.	0.09	0.00	0.00	0.02	0.05	2.07
	.28						.10	.11			.07					1.79
		T.				.06	1.01	.11		T.	.11			.03	.10	2.35
0.00	0.00	0.00	0.00	0.00	0.00	?	?	0.02	0.00	0.05	0.00	0.00	0.00	0.00	0.00	2.43
						*	+	.73	.03	.05						2.43
0.00	0.04	0.10	0.10	0.00	0.00	0.05	0.21	0.07	0.00	0.11	0.39	0.04	0.00	0.11	0.01	2.80
	T.	.19					.03	.49		T.	.30					3.29
							.04			.52	.14	.05				1.66
						T.	.29			.39	.36	.03			.05	2.83
	.30	.14					.28				.19			.21		3.05
							.54	.08			.39	.19				2.37
	.10						.10				.10	.02		.49	.01	1.96
	*	11.16				.37	.40				.47			.20		2.30
										1.35				.20	T.	5.00
0.02	0.30	T.	T.	0.00	0.00	0.17	0.41	0.11	0.02	0.22	0.39	0.20	0.04	0.01	0.00	2.28
	.72					.41	.04			.60	.63	.25	T.	.08		3.40
T.	.26	.02				.08	.07			T.	.30	.01	T.			1.65
	1.30						T.		.22	.30	.56	.86				4.86
						.57										
						.17	T.			T.	.05	.04				0.94

## DAILY AND MONTHLY PRECIPITATION

STATIONS.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<i>Cent. Lakes (Con.).</i>														
Romulus .....			.12	.04		.11					T.			
Ithaca .....		.08		T.	.33	.20								
Penn Yan.....														
Average .....	0.01	0.06	0.03	0.14	0.11	0.30	0.01	0.00	0.01	T.	0.19	0.02	0.01	T.

\* Amount included in next measurement.

† Not used in computing the averages.

TION FOR JUNE, 1893 — (INCHES) — (*Concluded*).

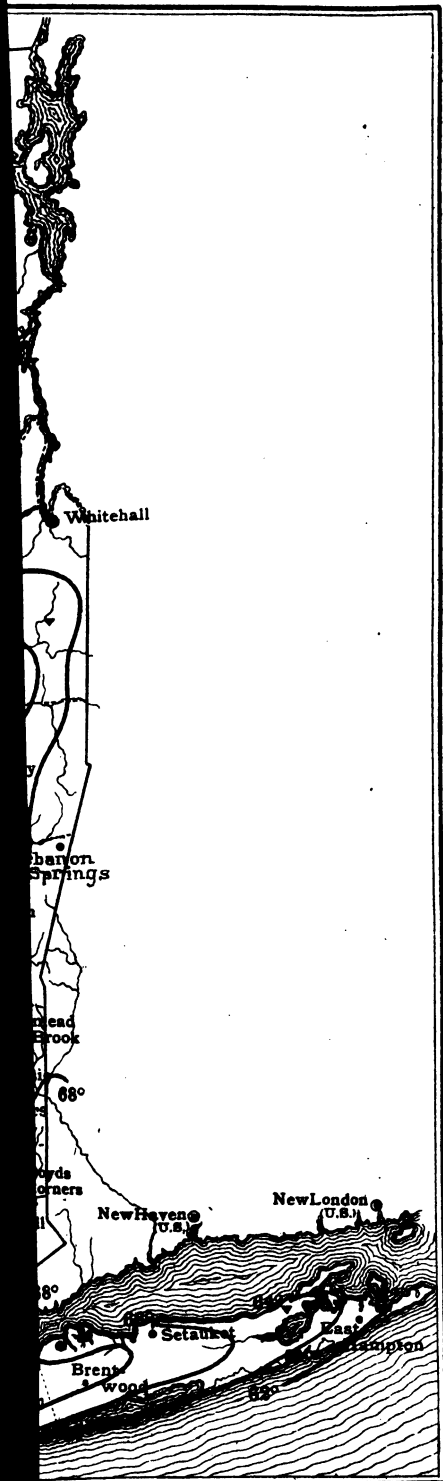
15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	Total.
.....	.03	.....	.....	.....	.....	.12	.58	.....	.....	.....	.41	.....	.....	.....	.....	1.41
.....	.08	.....	.....	.....	.....	.60	.56	.....	.....	T.	.35	.....	.....	.....	T.	2.21
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
0.03	0.07	0.04	0.01	0.01	T.	0.18	0.39	0.12	T.	0.10	0.36	0.06	T.	0.04	0.03	2.47

‡ Record for the month incomplete.      † Reports too late to be used in computing the averages.

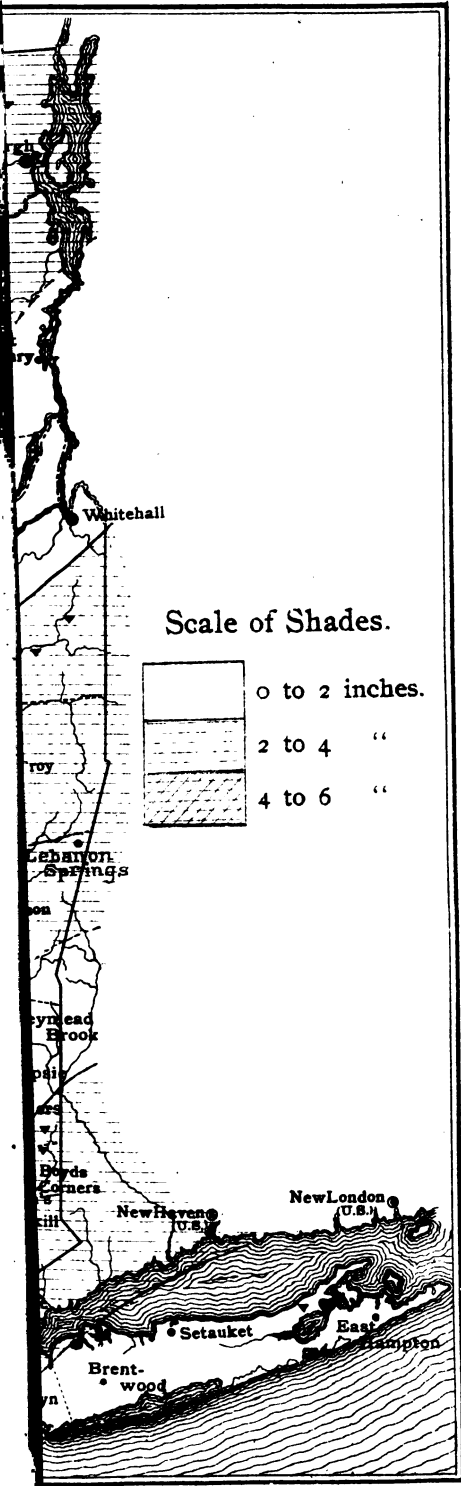
## TEMPERATURE AND

STATION.	County.	TEMPERATURE — (DEGREES FAHR.)							EXTREME MONTHLY TEMPERATURE FOR JULY		
		Normal for the month of June.	Length of record, years	Record begins.	Record ends.	Mean for June, 1893.	Departure from the normal.		Highest.	Year.	Lowest.
<i>Western Plateau.</i>		65.9	...	...	...	67.8	+2.0	...	...	...	...
Angelica*	Allegany	64.9	12	1854	1893	65.5	+0.6	71.1	1856	60.0	...
Humphrey	Cattaraugus	65.2	11	1883	1893	66.4	+1.2	67.7	1890	61.3	...
Elmira*	Chemung	67.5	13	1852	1893	71.6	+4.1	...	...	...	...
<i>Eastern Plateau.</i>		65.3	...	...	...	67.6	+2.4	...	...	...	...
Cooperstown	Otsego	64.2	40	1854	1893	66.1	+1.9	71.9	1870	57.8	...
Waverly	Tioga	66.4	12	1882	1893	69.2	+2.8	69.7	1892	63.8	...
<i>Northern Plateau.</i>		62.8	...	...	...	66.9	+4.1	...	...	...	...
Lowville	Lewis	62.8	25	1827	1893	66.9	+4.1	...	...	...	...
<i>Coast Region.</i>		67.8	...	...	...	67.9	+0.1	...	...	...	...
New York City	New York	68.9	23	1871	1883	69.0	+0.1	72.0	1892	64.2	...
Setauket	Suffolk	66.7	5	1886	1893	66.6	-0.1	68.9	1892	63.8	...
<i>Hudson Valley.</i>		68.2	...	...	...	69.0	+0.8	...	...	...	...
Albany	Albany	68.5	20	1874	1893	70.0	+1.5	72.5	1884	65.0	...
Honeymead Brook	Dutch-ss	66.9	13	1881	1893	67.2	+0.3	69.7	1889	62.7	...
Poughkeepsie*	Dutchess	68.4	22	1828	1893	68.5	+0.1	...	...	...	...
West Point	Orange	69.7	61	1824	1892	70.2	+0.5	74.8	1831	63.5	...
Rondout*	Ulster	67.3	20	1828	1892	...	...	73.1	1831	60.5	...
<i>Mohawk Valley.</i>		64.9	...	...	...	68.2	+3.3	...	...	...	...
Utica*	Oneida	64.9	33	1826	1893	68.5	+3.6	73.4	1828	56.0	...
<i>Champlain Valley.</i>		61.7	...	...	...	65.3	+3.6	...	...	...	...
Plattsburgh Barracks.	Clinton	64.7	33	1839	1893	66.3	+1.6	72.4	1870	60.5	...
<i>St. Lawrence Valley.</i>		65.8	...	...	...	69.4	+3.6	...	...	...	...
Madison Barracks.	Jefferson	65.2	29	1829	1893	69.1	+3.9	72.9	1831	59.2	...
Canton*	St. Lawrence	66.4	31	1862	1893	69.8	+3.4	73.9	1870	61.6	...
North Hammond.	St. Lawrence	67.6	16	1866	1893	70.9	+3.3	77.9	1870	63.0	...
Potsdam*	St. Lawrence	64.2	22	1828	1893	67.9	+3.7	69.9	1838	56.7	...
<i>Great Lakes.</i>		65.6	...	...	...	66.6	+1.0	...	...	...	...
Buffalo	Erie	64.7	23	1871	1893	67.0	+2.3	67.8	1873	60.9	...
Rochester	Monroe	66.8	23	1871	1893	71.0	+4.2	69.8	1876	61.0	...
Fort Niagara	Niagara	65.4	24	1829	1893	69.0	+3.6	...	...	...	...
Baldwinsville.	Onondaga	64.7	18	1849	1893	71.0	+6.3	...	...	...	...
Oswego	Oswego	63.9	23	1871	1893	66.0	+2.1	68.9	1876	58.2	...
Palermo	Oswego	65.4	37	1857	1893	68.5	+3.1	71.6	1870	59.4	...
Lyons	Wayne	65.2	7	1860	1892	...	...	...	...	...	...
Erie, Pennsylvania.	Erie	68.8	20	1874	1893	68.0	-0.8	71.0	1876	62.0	...
<i>Central Lakes.</i>		66.3	...	...	...	69.4	+3.0	...	...	...	...
Geneva	Ontario	65.7	16	1854	1893	69.8	+4.1	...	...	...	...
Ithaca.	Tompkins	66.9	15	1879	1893	68.9	+2.0	69.7	1884	61.3	...
Average departure....		...	...	...	...	...	+2.4	...	...	...	...

\* Location of the instruments has been changed.







Scale of Shades.



0 to 2 inches.

2 to 4 "

4 to 6 "





## ALL STATISTICS FOR JUNE, 1893.

STATION.	County.	RAINFALL (INCHES).									
		Average for the month of June.	Length of record, years.	Record begins.	Record ends.	Total for June, 1893.	Departure from the average.	EXTREMES OF MONTHLY PRECIPITATION FOR JUNE.			
								GREATEST.		LEAST.	
								Amount.	Year.	Amount.	Year.
<i>Western Plateau</i> ..		4.72	...	...	...	3.50	-1.22				
Angelica .....	Allegany .....	4.79	10	1857	1893	2.35	-2.44	12.50	1857	2.35	1893
Humphrey .....	Cattaraugus ..	4.85	11	1883	1893	4.54	-0.31	8.85	1889	2.14	1887
Elmira .....	Chemung .....	4.53	13	1852	1893	3.62	-0.91				
<i>Eastern Plateau</i> ..		3.86	...	...	...	2.64	-1.20				
Cooperstown .....	Otsego .....	4.18	40	1854	1893	2.20	-1.98	9.76	1855	0.95	1870
Port Jervis .....	Orange .....	3.79	8	1880	1893	3.79	-0.00	6.01	1892	1.39	1891
Waverly .....	Tioga .....	3.60	12	1882	1893	1.97	-1.63	8.31	1883	1.17	1888
<i>Northern Plateau</i> ..		3.41	...	...	...	1.90	-1.51				
Lowville .....	Lewis .....	3.41	23	1827	1893	1.90	-1.51				
<i>Coast Region</i> .....		2.96	...	...	...	1.57	-1.38				
New York city .....	New York .....	3.25	23	1871	1893	2.56	-0.69	7.70	1887	1.18	1891
Setauket .....	Suffolk .....	2.66	8	1886	1893	0.58	-2.08	6.57	1887	0.58	1893
<i>Hudson Valley</i> .....		3.30	...	...	...	2.26	-1.12				
Albany .....	Albany .....	3.67	20	1874	1893	2.92	-0.75	6.43	1889	1.80	1884
Honeymead Brook ..	Dutchess .....	2.79	10	1884	1893	1.88	-0.91	4.80	1887	1.22	1884
West Point .....	Orange .....	3.54	47	1840	1893	1.33	-2.21	7.37	1819	0.76	1873
Boyd's Corners .....	Putnam .....	3.96	10	1866	1892	...	...	5.73	1871	1.81	1891
Rond ut .....	Ulster .....	3.52	21	1830	1893	2.91	-0.61				
<i>Mohawk Valley</i> .....		4.34	...	...	...	2.35	-1.99				
Utica .....	Oneida .....	4.34	38	1826	1893	2.35	-1.99	7.93	1830	1.52	1884
<i>Champlain Valley</i> ..		2.91	...	...	...	2.42	-0.49				
Plattsburgh Barracks ..	Clinton .....	2.91	32	1840	1893	2.42	-0.49	7.62	1892	1.27	1881
<i>St. Lawrence Valley</i> ..		3.25	...	...	...	2.98	-0.27				
Malone .....	Franklin .....	3.93	13	1830	1893	3.29	-0.64				
Madison Barracks .....	Jefferson .....	2.64	32	1840	1893	1.66	-0.98	5.41	1892	0.88	1880
North Hammond .....	St. Lawrence ..	3.06	16	1866	1893	1.96	-1.10	8.74	1866	0.82	1868
Potsdam .....	" .....	3.37	23	1828	1893	5.00	+1.63	5.03	1843	1.52	1832
<i>Great Lakes</i> .....		3.52	...	...	...	2.04	-1.47				
Buffalo .....	Erie .....	4.08	23	1871	1893	1.65	-2.43	9.52	1892	1.24	1876
Rochester .....	Monroe .....	3.28	22	1871	1893	0.94	-2.34	6.68	1892	0.94	1893
Fort Niagara .....	Niagara .....	2.43	36	1841	1893	2.02	-0.41	7.25	1842	0.28	1864
Oswego .....	Oswego .....	3.47	23	1871	1893	2.20	-1.27	9.81	1889	1.03	1886
Palermo .....	" .....	3.65	40	1854	1893	2.26	-1.39	8.80	1865	0.70	1864
Erie, Pennsylvania ..	Erie .....	4.18	20	1874	1893	3.20	-0.98	6.48	1892	2.33	1879
<i>Central Lakes</i> .....		3.56	...	...	...	2.67	-0.89				
Geneva .....	Ontario .....	3.34	24	1841	1893	3.13	-0.21	8.14	1857	0.98	1861
Ithaca .....	Tompkins .....	3.78	15	1879	1893	2.21	-1.57	6.74	1889	1.35	1884
Average departure ..							-1.12				

during the period covered by the record.

## Meteorological Summary for July, 1893.

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The average atmospheric pressure (reduced to a sea-level and 32 degrees Fahr.) for the State of New York during July was 29.94 inches. The highest barometer was 30.32 inches at Number Four, Lewis county, on the fourth; and the lowest was 29.58 inches at Ithaca on the twenty-second. The pressure was quite uniform over New York, a slight decrease being noted, however, from the southern toward the northern portion of the State. The mean pressure over the State during the month was very nearly normal; the average value for six stations of the National Bureau showing a deficiency of 0.01 inch.

The mean temperature of the State, as derived from the records of sixty-seven stations, was 68.9 degrees; the highest general daily mean being 76.1 degrees on the sixteenth, and the lowest, 60.6 degrees on the twenty-fourth. The highest local monthly mean was 75.0 degrees at New York city; and the lowest was 62.6 degrees at Number Four, Lewis county. The maximum temperature reported during the month was 98 degrees at Eden Centre on the eighth; while the minimum was 36 degrees at Angelica, Allegany county, on the twenty-fourth. The mean monthly range of temperature was 43 degrees; the greatest range being 58 degrees at Eden Centre, Erie county, and the least 30 degrees at Dunkirk. The mean daily range was 22 degrees; the greatest daily range being 48 degrees at South Kortright on the twenty-fifth, and the least 1 degree at Plattsburgh Barracks on the twenty-second. The mean temperatures

of the various sections of the State were as follows: The Western plateau, 68.7 degrees; the Eastern plateau, 67.7 degrees; the Northern plateau, 64.6 degrees; the Coast region, 73.2 degrees; the Hudson valley, 70.5 degrees; the Mohawk valley, 67.7 degrees; the Champlain valley, 68.0 degrees; the St. Lawrence valley, 67.5 degrees; the Great Lake region, 70.4 degrees, and the Central Lake region 71.0 degrees. The average of the mean temperatures at twenty-eight stations possessing records for previous years was within 0.1 degrees of the normal value. The month was warmer than the average July in the Great Lake and Atlantic Coast regions, but for the remaining regions the departures from the normal were slight.

The mean relative humidity was 73 per cent. The mean dew point was 59 degrees.

The average precipitation, as derived from the records of eighty-seven stations, was 3.29 inches of rain. The general maximum rainfall, exceeding four inches, occurred on the northern and central highlands, and over a limited area of the western section. The greatest local monthly rainfall was 7.09 inches at Phoenix, Oswego county, and the least was 1.20 inches at Ogdensburgh. The duration and amount of the heaviest rains of July are exhibited in the following table of meteorological data. The maximum precipitation over the Eastern and Western plateaus and the Lake regions occurred on the eighth, when eight stations reported amounts exceeding two inches. On the sixteenth a very heavy local rain occurred southeast of Lake Ontario; while on the twenty-second an amount exceeding two inches fell in the St. Lawrence valley; the maximum precipitation at stations of the Northern plateau also occurring on that date. The average precipitation at twenty-nine stations possessing records for previous years was 0.71 inches below the normal amount. The

rainfall was the least recorded for July at the Weather Bureau station in New York city, whose period of observation covers twenty-three years; and also at Port Jervis and Angelica the amounts are the least on record during the respective periods of nine and eleven years.

The average number of days on which the precipitation amounted to 0.01 inch or more was 9.6. The number was deficient, as compared with the general average, in the southeastern and northeastern sections, and above it on the Eastern plateau and in the Great Lake region. The average number of clear days was 10.5; of partly cloudy days, 16.2, and of cloudy days, 4.3. The average cloudiness was 41 per cent (overcast—100 per cent).

The prevailing direction of the wind was from the southwest. The average total wind travel at six stations of the United States Weather Bureau and at Ithaca was 5,918 miles. The wind travel was greater than usual in both the Coast and Great Lake regions.

Thunderstorms were reported on the first at three stations of northern New York; on the third at fourteen stations of the central, western and northern sections; on the fifth at sixteen stations throughout the State; on the eighth at nineteen stations of all regions; on the twelfth at ten stations in the territory between Lake Erie and the Hudson valley; on the thirteenth at eight stations of the southern tier of counties, including Long Island; on the fourteenth at Waverly and Eden Centre; on the fifteenth at fifteen stations in all sections excepting the coast; on the sixteenth at two stations in the southwestern counties and one in the Hudson valley; on the seventeenth at four stations in the southwestern counties and three in the Hudson valley and coast; on the eighteenth at Humphrey and

at three stations of the Hudson valley and coast; on the nineteenth at LeRoy and Malone; on the twentieth at LeRoy; on the twenty-second at eleven stations of the western, central and northern counties; on the twenty-third at Wedgewood and Honeymead Brook; on the twenty-sixth at six stations of the western and central sections; on the twenty-eighth at LeRoy and Eden Centre; and on the thirty-first at six stations of the western, central and northern sections.

Hail was reported on the first at Number Four; on the fifth at Port Jervis, Utica and Hess Roads; on the fifteenth at Humphrey and Wedgewood; on the eighteenth at Potsdam; on the twenty-second at Victor, New Lisbon, Number Four, Lebanon Springs and Palermo. The storm of the twenty-second was especially severe, hailstones as large as hens' eggs falling at Palermo, breaking glass and destroying crops; while near Lebanon Springs 560 pains of glass were broken.

Light frosts were reported on the twenty-fourth from four stations in the upper valleys of the Central and Western plateaus.

Solar halos were observed on the sixth and twenty-eighth.

On the eighth a tornado occurred near Lyons, demolishing a large building in course of construction.

During July the weather of New York was influenced by five areas of high and eight areas of low pressure; the number of depressions being slightly below the average for July of previous years. Seven centers of depression passed near the northern border of the State, or over Canada, on the second, third, fifth, eighth, fifteenth, twenty-sixth, twenty-ninth and thirty-first; and in addition to these a low pressure area remained persistently over the northeastern coast during the latter half of July, uniting with the eastward-moving areas above mentioned. The

most strongly developed depressions of the series were those passing near the State on the eighth, fifteenth and twenty-sixth; the remaining areas having but slight energy. All of the high-pressure systems passed over the northeastern States, and thence to the central or southern coast; bringing periods of fair weather central (for New York) on the second and seventh, tenth and eleventh, twentieth and twenty-first, twenty-fourth, and twenty-eighth. The first area was the most persistent of the series, remaining near the Atlantic coast line from the first to the seventh. The amount of sunshine was much above the average in the southeastern section of the State, but decreased to about the usual value near the general storm track further north.

The rainfall, as in June, occurred mainly during thunderstorms, the heaviest of which occurred in the central and western sections on the eighth and fifteenth, and in the northern counties on the fifth, eighth and twenty-second. The disturbance of the twenty-second was notable for exceptionally severe hail and wind storms at many localities between the Great Lakes and the Massachusetts border; and dangerous gales were also reported from the southwestern counties on the eighth, and from the St. Lawrence Valley region on the twenty-sixth.

The average temperature for the month was normal; warm periods central about the eighth, sixteenth, twenty-second and twenty-sixth being followed by depressions of temperature below the average value. The greatest deficiency occurred on the twenty-fourth when light frosts were reported on the Central plateau. Heated terms of considerable severity obtained about the fifteenth and seventeenth, when a temperature of 95 degrees was reported at Rochester; the maximum in the Atlantic Coast region, however, occurring on the twenty-sixth.

The month as a whole was favorable for farming interests, excepting as local damage resulted from a deficient rainfall. Early in the month a drouth was reported from the southeastern and northeastern counties, and in portions of the Great Lake region; and in these localities the supply of ground-water continued to decrease as the month advanced. Haying was general during the first week of July, the season being remarkable for a large growth of clover. Wheat and rye harvesting was in progress about the middle of the month, and continued for the most part with favorable weather conditions, giving a good yield of grain. The oat harvest was under way by the twenty-fifth, the product being below the average amount in most cases. Grapes developed well in the western section of the State, but were attacked by blight in many vineyards of the Hudson valley. Corn and other growing crops, although much benefited by the hot weather of the second and fourth weeks, scarcely reached the stage of growth usual at the season.



## METEOROLOGICAL DATA

LOCATION OF STATIONS.			BAROMETER.						HUMIDITY.		TEMP.		
STATIONS.	County.	Elevation (feet).	Mean.	Highest.	Date.	Lowest.	Date.	Monthly range.	Mean relative.	Dew point (degrees).	Mean of tri-daily obser- vations.	Mean of maximum and minimum.	Highest.
<i>Western Plateau.</i>													
Alfred Centre	Allegany	1824										68.7	98
Angelica	"	1840										67.6	90
Friendship	"	1550	29.99	30.28	24	29.73	5	0.55	69	56	66.1	66.6	91
Humphrey	Cattaraugus	1950							78	61	68.0	66.5	87
<i>Arkwright.</i>													
Elmira	Chautauqua	1260										67.5	84
Chemung	"	863									73.8	73.8	
LeRoy	Genesee	888									69.2	70.0	90
Mt. Morris	Livingston	625							71	59		69.4	96
<i>Lockport.</i>													
Victor	Niagara	616										70.9	92
Ontario	"	650										71.3	94
Wedgewood	Schuyler	1350									67.4	69.5	93
Addison	Steuben	1600									68.4	69.5	92
<i>South Canisteo.</i>													
Steuben	"	1480									66.4	67.1	99
Arcade	Wyoming	1557									69.2	66.5	89
Varysburg	"											67.9	13
Italy Hill	Yates	1650											
<i>Eastern Plateau.</i>													
Binghamton	Broome	870									68.1	67.7	94
Oxford	Chenango	1250										68.5	88
Cortland	"	1120										67.1	86
<i>South Kortright.</i>													
Delaware	"	1700										64.9	86
Brookfield	Madison	1350									66.5	66.3	88
Middletown	Orange	660									71.5	71.2	91
Port Jervis	"	470										70.3	90
<i>Cooperstown.</i>													
Otsego	"	1800									65.4	65.6	87
New Lisbon	"	1234									68.0	64.7	86
Quaker Street	Schnectady	973											
Perry City	Schuyler	088									66.9	68.2	91
<i>Waverly.</i>													
Tioga	"	825									70.6	70.7	94
Newfield Summit	Tompkins	2050										67.2	87
Minnewaska	Ulster	1800							65	56		67.5	84
<i>Northern Plateau.</i>													
Clinton	"	1917										64.6	88
Essex	"	1015											
Amersand	Franklin	1600	29.90	30.11	11	29.59	8	0.52	72	55	63.3	64.4	84
<i>Gloversville.</i>													
Fulton	"	802									66.5	67.0	86
Blue Mt. Lake	Hamilton												
Bisby Lodge	Herkimer												
Constableville	Lewis	1246									63.6	63.7	83
<i>Lowville.</i>													
Lewis	"	900										65.6	87
Number Four	"	1571	29.95	30.32	6	29.70	26	0.62	82	57	62.6	62.7	84
Turn	"	1240										64.1	83
<i>Coast Region.</i>													
New York City	New York	164	29.96	30.23	11	29.61	22	0.62	68	60		73.2	97
Willet's Point	Queens											75.0	93
Brentwood	Suffolk	75									71.5	73.6	97
Setauket	"	40							74	63	71.5	72.2	94
<i>Hudson Valley.</i>													
Albany	"	85	29.92	30.21	11	29.62	21	0.59	71	60		70.5	96
Lebanon Springs	Columbia	880										72.0	92
Honeymead Brook	Dutchess	450									68.4	66.4	83

FOR JULY, 1893.

TEMPERATURE—(IN DEGREES FAHR.).										SKY.		PRECIPITATION—(INCHES).					WIND.	
Date.	Lowest.	Date.	Monthly range.	Mean daily range.	Greatest daily range.	Date.	Least daily range.	Date.	Number of clear days.	No of partly cloudy days.	Number of cloudy days.	Number of days on which 0.01 or more inches fell.	Total.	Greatest rainfall.	Duration.†	Date.	Total snow fall.	Prevailing direction.
15	36	24	49	25	44	28	7	2	12	3	13	9	3.11	1.97	H. M.	26		N. W.
15	40	24	50	24	35	9	14	9	8	18	5	7	3.02	1.20	2	0	8	N. W.
15	36	24	56	23	44	25	17	9	13	17	1	11	1.79	0.41	1	25	8	N. W.
15	38	24	53	27	43	28	15	6	9	19	3	8	2.01	0.95	...	15-16	15	N. W.
15	42	24	45	24	35	15	15	27	5	20	6	11	3.66	1.20	13	30	15	S. W.
25	50	10	34	15	22	23	7	24	25	6	0	10	3.89	1.01	...	14		N. W.
15	46	24	44	21	33	25	13	11	9	16	6	11	3.67	1.05	1	30	3	N. W.
15	40	24	55	30	42	28	18	14	10	14	7	10	1.97	0.75	...	31		N. W.
25	45	24	47	23	36	1	7	6	...	...	...	8	4.78	1.97	...	26		S. W.
25	46	24	48	26	42	25	15	9	15	12	4	10	4.04	1.09	3	0	8	S. W.
25	44	24	49	26	40	25	17	13	13	17	1	12	3.55	1.75	3	50	15	S. W.
25	42	24	50	26	40	25	14	6	20	11	0	10	2.37	0.40	0	40	22	S. W.
8	37	24	54	28	40	25	17	9	21	6	4	12	2.70	0.75	1	50	8	N. W.
15	37	24	52	24	40	28	13	29	13	12	6	7	2.55	0.80	7	15	8	N. W.
15	38	24	55	26	39	25	13	6	11	13	7	9	3.23	0.96	...	31		N. W.
25	88	h	45	23	43	28	8	ac	12	5	15	0	4.02	1.56	...	8		W.
25	41	23	50	25	45	25	12	14	13	14	4	14	4.10	0.83	1	20	5	W.
25	43	11	45	28	42	25	18	15	...	...	...	13	6.01	1.12	2	20	15	W.
25	46	11	40	18	34	25	10	9	...	...	...	9	4.57	1.52	...	8		W.
25	33	h	46	31	48	25	17	23	...	...	...	8	3.50	0.80	...	8		W.
25	42	11	45	24	40	25	16	ad	13	13	5	9	4.33	1.05	6	45	8	N. W.
25	50	24	41	21	34	25	12	14	17	12	2	8	2.23	0.70	2	10	5	N. W.
25	46	23	44	22	40	25	13	9	12	15	4	10	3.33	1.00	...	26	27	N. W.
25	44	28	43	19	33	8	8	ac	10	19	2	10	4.85	0.95	6	30	8	N. W.
25	40	24	46	27	43	25	14	23	10	14	7	11	5.13	1.11	14	0	8	S. W.
25	44	24	47	26	42	25	10	3	12	16	3	11	4.99	1.56	...	...	8	N. W.
25	41	23	53	27	44	25	10	29	13	17	1	10	3.55	1.09	12	0	15-16	W.
25	45	23	42	18	25	7	10	22	...	...	...	...	1.60	0.33	3	0	8	W.
25	47	24	37	16	28	26	10	11	...	...	...	...	...	...	...	...	...	...
25	41	23	41	21	41	25	7	12	9.5	15.8	5.7	8.7	3.34	1.28	...	22		...
25	45	10	39	18	30	7	9	29	14	14	3	10	5.70	1.28	...	22		...
25	42	24	46	26	37	20	15	bb	8	16	7	10	2.69	0.62	2	02	8	S. W.
25	44	24	39	21	35	25	10	bc	30	7	4	2	2.04	1.22	5	0	31	W.
25	42	20	45	23	41	25	10	12	6	21	4	10	2.79	0.77	2	0	5	N. W.
25	41	23	43	21	33	25	12	28	2	19	10	8	4.27	1.25	1	10	1	N. W.
25	46	20	36	19	35	25	7	12	7	18	6	12	2.58	0.64	...	...	3	N. W.
25	51	25	41	20	38	25	4	7	14	0	2	6.5	1.70	0.90	3	0	5	...
25	56	24	37	17	24	25	10	23	9	15	3	9	1.26	0.37	...	...	26	...
25	54	24	43	20	32	25	4	7	...	...	...	5	1.77	0.80	1	30	6	N. W.
25	51	25	44	24	38	25	12	27	16	15	0	4	1.90	0.90	3	0	5	S. W.
25	53	25	41	20	29	25	9	27	17	11	3	8	1.88	0.50	0	42	18	W.
25	41	24	45	24	47	25	10	23	10	2	5.8	10	3.01	1.30	...	...	6	...
25	51	24	41	22	33	25	12	9	11	16	4	11	1.80	0.50	...	...	8	S.
25	41	24	47	23	40	1	18	22	3	15	13	8	3.84	0.90	7	0	1	W.
25	42	24	47	23	35	25	11	29	16	8	7	12	4.12	0.73	7	20	5	S. W.

## METEOROLOGICAL DATA

LOCATION OF STATIONS.			BAROMETER.						HUMIDITY.		TEMP.		
STATIONS.	County.	Elevation, feet.	Mean.	Highest.	Date.	Lowest.	Date.	Monthly range.	Mean relative.	Dew point (degrees).	Mean of tri-daily observations.	Mean of maximum and minimum.	Highest.
<i>Hudson Val.—(Cont'd)</i>													
Poughkeepsie	Dutchess	180										69.6	93
Wappinger's Falls	"	167										72.2	94
West Point	Orange	167										74.6	96
Boyd's Corners	Putnam	546											
Carmel	Putnam	500											
Stillwater	Saratoga										69.2	70.3	92
Rondout	Ulster	150											
<i>Mohawk Valley</i>													
Rome	Oneida	445										67.7	91
Utica	"	537							88	61		67.1	85
												68.2	91
<i>Champlain Valley</i>													
Plattsburgh Barracks	Clinton	125										68.0	89
Port Henry	Essex											68.0	89
Glens Falls	Warren	840											
Whitehall	"												
<i>St. Lawrence Valley</i>													
Malone	Franklin	810									66.4	67.5	91
Madison Barracks	Jefferson	266										65.5	88
Watertown	"	486	29.98	30.28	11	29.69	22	0.59				69.1	91
												69.2	90
Canton	St. Lawrence	304											
North Hammond	"	300											
Ogdensburg	"	258									67.8	68.5	92
Potsdam	"	300									67.0	66.8	89
<i>Great Lakes</i>													
Dunkirk	Chautauqua	599										70.4	98
Buffalo	Erie	690	29.94	30.19	20	29.71	5	0.48	70	60		68.8	81
Eden Centre	"	690										70.0	85
												69.6	98
Brockport	Monroe	520											
Rochester	"	621	29.97	30.23	20	29.71	22	0.52	70	59		71.0	95
Fort Niagara	Niagara	263										73.4	97
Hess Road Station	Niagara	330										70.3	90
Baldwinsville	Onondaga	390									69.8	71.0	91
Albion	Orleans	521											
Oswego	Oswego	304	29.98	30.19	11	29.66	22	0.53	72	58		69.0	90
Palermo	"	460							74	60	68.2	69.6	91
Lyons	Wayne	407											
Erie, Pa.	Erie	681	29.96	30.20	11	29.76	31	0.44	66	59		71.0	90
<i>Central Lakes</i>													
Fleming	Cayuga	1000										71.0	98
Geneva	Ontario	459									73.0	71.7	91
											70.1	71.1	95
Watkins	Schuyler	737									70.8	72.4	98
Romulus	Seneca	719							80	61		70.5	93
Hammondsport	Steuben	800											
Ithaca	Tompkins	840	29.92	30.21	11	29.58	29	0.63			69.0	69.4	92
Mean			29.94	30.32	6	29.58	22	0.55	73	59		68.9	98

\* Mean of the tri-daily observations. † Mean of the maximum and minimum by the from the tri-daily observations are derived by the formula (7 A. M. + 3 P. M. + 9 P. M. + 9 within twenty-four hours.

(a) 15, 25; (b) 22, 28; (c) 1, 2, 16, 25; (d) 1, 8; (e) 8, 25; (f) 20, 23; (g) 24, 28; (h) 24, 25, 28; (i) 28, 31; (j) 21, 24; (u) 1, 7, 20, 25; (v) 1, 10; (w) 25, 28; (x) 5, 24; (y) 6, 24; (aa) 9, 14; (ab) 3, 27; (ad) 6, 19; (de) 17, 27.

FOR JULY, 1893 — (Concluded).

TEMPERATURE — (IN DEGREES FAHR.).						SKY.		PRECIPITATION — (INCHES).					WIND.						
Date.	Lowest.	Date.	Monthly range.	Mean daily range.	Greatest daily range.	Date.	Least daily range.	Date.	Number of clear days.	Number of partly cloudy days.	Number of cloudy days.	Number of days on which 0.01 or more inches fell	Total.	Greatest rainfall.	Duration.†	Date.	Total snowfall.	Prevailing direction.	
7	49	10	51	31	47	25	15	7	11	15	5	9	1.66	0.75	H. M.	6	.....	S.	
22	50	25	44	23	37	25	12	15	15	14	2	13	3.13	1.04	2	10	.....	S. W.	
23	53	10	42	22	31	5	12	12	12	12	12	12	4.53	1.30	2	10	.....	S. W.	
24	50	m	42	22	30	4	10	23	5	22	4	12	2.89	1.21	4	0	.....	W.	
25	45	24	42	22	38	1	5	13	2	26	3	12	2.12	0.60	2	0	18	.....	S.
26	48	24	37	19	28	23	5	13	1	11	9	12	4.14	1.58	.....	.....	.....	.....	
27	45	24	46	24	38	1	11	9	2	26	3	12	2.96	0.74	.....	.....	.....	.....	
28	47	10	42	20	31	v	1	22	.....	.....	.....	9	5.32	1.58	.....	.....	.....	W.	
29	47	10	42	20	31	v	1	22	.....	.....	.....	9	3.34	1.05	5	15	.....	.....	
30	47	10	42	20	31	v	1	22	.....	.....	.....	9	3.34	1.05	5	15	.....	S. W.	
31	47	10	42	20	31	v	1	22	.....	.....	.....	9	3.34	1.05	5	15	.....	S. W.	
1	46	24	49	30	36	7	6	22	9.8	14.7	7.0	10.0	3.05	0.89	0	45	.....	.....	
2	47	20	41	18	30	8	1	8	bd	7	10	15	5.17	0.89	0	45	.....	S. W.	
3	47	20	43	30	36	7	6	22	.....	.....	.....	8	2.26	0.69	6	0	.....	W.	
4	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
5	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
6	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
7	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
8	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
9	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
10	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
11	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
12	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
13	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
14	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
15	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
16	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
17	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
18	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
19	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
20	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
21	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
22	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
23	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
24	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
25	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
26	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
27	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
28	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
29	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
30	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
31	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
1	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
2	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
3	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
4	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
5	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
6	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
7	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
8	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
9	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
10	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
11	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
12	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
13	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
14	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
15	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
16	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
17	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
18	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
19	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
20	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
21	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
22	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
23	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
24	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
25	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
26	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
27	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
28	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
29	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
30	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
31	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
1	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
2	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
3	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
4	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
5	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
6	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
7	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
8	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
9	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
10	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
11	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
12	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
13	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
14	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
15	46	24	44	23	34	23	18	12	6	24	1	9	2.20	0.69	.....	.....	.....	S.	
16	46	24	44	23															

## DAILY AND MONTHLY MEAN

STATIONS.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<i>Western Plateau.</i>	68	70	70	68	68	67	71	76	66	59	63	70	74	74
Alfred Centre.....	65	67	68	62	68	63	72	75	65	58	63	69	72	75
Angelica.....	66	66	63	64	63	66	68	76	64	55	68	69	74	74
Friendship.....	63	66	68	60	66	65	70	76	64	52	58	70	72	73
Humphrey.....	67	68	67	61	64	63	71	74	63	58	60	68	73	74
Arkwright.....	68	70	63	.....	66	68	70	82	62	59	64	72	78	72
Elmira.....	72	75	73	.....	72	71	75	78	70	66	70	74	76	76
Le Roy.....	70	72	70	66	69	67	73	74	66	60	64	70	75	74
Mt. Morris.....	68	70	70	63	68	65	72	78	66	59	62	72	74	74
Lockport.....	71	74	70	64	70	72	70	78	64	64	66	72	74	74
Victor.....	78	74	69	67	68	66	72	80	66	64	65	71	76	75
Wedgewood.....	69	72	69	64	67	67	71	79	65	60	66	70	76	74
Addison.....	66	68	70	65	69	68	72	78	68	61	64	71	76	74
South Canisteo.....	64	66	68	60	66	68	70	78	66	57	60	69	74	73
Arcade.....	66	68	66	66	66	64	69	76	63	55	60	70	78	72
Varysburg.....	67	70	66	62	72	64	70	72	64	57	62	70	72	72
Italy Hill.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
<i>Eastern Plateau.</i>	68	70	68	65	65	65	68	74	67	61	62	67	73	70
Binghamton.....	68	70	68	67	66	68	67	76	66	60	63	68	73	71
Oxford.....	66	70	72	64	64	68	66	74	67	62	62	66	72	74
Cortland.....	68	69	68	64	66	64	65	72	65	60	60	66	70	72
South Kortright.....	64	66	67	61	60	64	64	74	65	58	59	62	70	68
Brookfield.....	70	78	66	64	64	60	70	74	68	58	58	63	70	71
Middletown.....	68	72	71	68	70	66	72	74	70	64	68	73	76	69
Port Jervis.....	67	69	73	69	68	69	71	75	71	63	69	71	76	71
Cooperstown.....	68	71	66	61	62	64	64	72	62	60	59	60	69	71
New Lisbon.....	64	68	64	61	59	64	65	72	64	58	58	61	70	69
Quaker Street.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ferry City.....	67	68	69	63	68	65	68	78	64	61	62	69	73	71
Waverly.....	67	69	71	65	68	71	74	78	72	69	63	69	79	73
Newfield Summit.....	72	71	64	60	67	62	68	76	62	62	62	68	66	70
Minnewaska.....	68	70	66	63	66	65	63	71	66	64	63	68	70	65
<i>Northern Plateau.</i>	68	69	65	62	60	64	64	72	61	60	59	58	66	69
Lyon Mountain.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Amersand.....	72	72	65	64	60	64	64	72	60	68	57	56	64	70
Gloversville.....	66	70	69	66	61	68	64	73	66	60	61	63	69	69
Constableville.....	66	66	62	62	57	64	62	70	60	59	60	58	66	67
Lowville.....	68	68	65	63	60	65	64	74	64	58	60	60	68	68
Number Four.....	70	70	64	60	62	62	64	74	58	56	56	55	65	68
Turin.....	66	66	63	60	58	62	64	73	60	56	60	58	66	68
<i>Coast Region.</i>	71	71	71	70	72	72	74	74	72	72	70	75	76	70
New York city.....	73	72	72	70	74	74	76	77	75	72	71	76	80	70
Willet's Point.....	73	72	70	70	74	72	80	72	66	78	72	76	76	70
Brentwood.....	68	70	72	69	68	71	72	72	75	68	67	73	76	70
Setauket.....	69	71	69	71	70	70	69	73	75	68	68	74	74	70
<i>Hudson Valley.</i>	68	71	70	69	67	70	71	73	70	66	66	71	72	67
Albany.....	72	74	72	70	68	70	70	76	74	66	68	70	72	67
Lebanon Springs.....	66	67	68	66	64	68	68	72	70	62	61	66	69	69
Honeymead Brook.....	66	69	70	66	65	66	68	73	70	63	62	70	69	68
Poughkeepsie.....	67	69	70	67	66	72	75	62	61	70	70	77	70	61
Wappinger's Falls.....	68	74	72	68	70	70	70	76	72	65	66	74	75	72
West Point.....	71	73	74	76	70	74	76	73	69	68	72	73	77	76
Boyd's Corners.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Carmel.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Stillwater.....	70	70	66	69	66	70	68	76	72	65	71	68	70	70
Rondout.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Peekskill.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
<i>Mohawk Valley.</i>	63	73	72	65	63	64	66	75	68	62	60	64	68	70
Rome.....	56	72	75	64	64	63	64	73	70	61	60	66	64	69
Utica.....	70	74	69	66	62	66	68	77	66	63	60	68	72	72

## STATE METEOROLOGICAL BUREAU.

161

TEMPERATURES FOR JULY, 1893.																															
16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Monthly mean.															
74 86 74 75 67	74 74 69 72 67	70 69 69 68 67	67 65 66 64 66	64 62 64 60 64	69 67 68 66 66	73 73 68 69 69	68 62 60 62 61	58 57 54 56 58	73 73 71 72 71	75 76 76 76 74	63 60 60 60 62	63 62 60 60 62	72 71 70 69 67	69 68 65 68 67	71 68 68 67 68	68.7 67.6 68.6 68.7 68.5															
72 79 77	70 77 73 76	68 75 71 72	65 70 68 65	64 71 65 64	68 74 65 69	71 82 78 74	62 67 64 64	62 65 59 58	74 80 80 74	66 80 74 78	62 67 74 64	68 70 67 63	68 75 67 74	68 74 73 68	72 73 70 72	67.5 73.3 70.0 69.4															
77 78 78 76	76 77 74 75	71 72 71 71	70 72 66 69	68 66 66 74	74 74 70 69	78 75 76 72	66 62 62 66	61 62 60 58	76 80 72 70	75 80 73 76	66 67 62 65	66 69 66 61	66 72 64 74	72 78 74 69	70 76 74 71	70.9 71.3 69.5 69.5															
77 74 73	74 74 76	72 68 73	64 64 65	60 60 63	65 67 65	70 72 73	62 61 63	55 54 57	70 71 74	75 74 76	65 60 62	60 64 63	72 68 72	68 64 66	69 68 69	67.1 66.5 67.9															
74 74 74 76 70	75 72 73 72 74	73 72 74 69 70	71 69 70 66 68	69 62 64 66 58	63 67 68 86 64	72 74 68 76 69	64 63 68 62 60	61 58 60 60 62	69 69 65 69 62	73 73 66 72 69	64 60 66 62 67	63 60 62 60 59	69 71 68 68 68	68 70 70 67 66	69 68 70 67 64	67.7 67.9 68.5 67.1 64.9															
74 70 73 71 69	73 76 76 73 74	72 76 72 68 72	69 76 75 68 68	68 75 74 68 60	64 78 67 61 64	71 75 76 71 70	68 71 72 60 59	56 62 62 57 55	65 65 63 64 63	74 80 78 76 72	66 68 67 60 60	62 70 64 61 58	64 68 67 64 68	66 69 72 64 66	68 72 70 68 66	66.3 71.2 70.3 65.6 64.7															
78 76 72 72 66	75 76 72 72 72	74 73 68 72 72	71 69 68 63 63	66 66 64 70 66	67 68 74 70 67	75 73 60 76 76	61 66 56 66 66	61 59 76 58 57	70 72 75 64 68	78 77 63 67 67	64 63 60 62 61	61 62 63 66 62	71 68 64 66 66	66 68 64 70 66	70 76 66 68 66	68.2 70.7 67.2 67.5															
72 69 70	74 73 76	69 67 71	68 66 72	63 63 70	67 69 69	71 65 76	56 64 62	57 56 58	64 68 61	68 69 70	61 60 64	62 58 66	66 65 69	66 68 68	66 65 68	64.6 64.4 67.0															
73 73 73 73	74 74 72 72	66 71 68 70	68 68 67 60	61 63 60 60	64 68 62 70	70 74 71 71	56 56 50 57	55 58 58 56	64 66 68 56	68 72 68 72	68 62 58 62	60 62 63 62	66 66 63 65	66 66 64 65	65 65 65 65	63.7 65.6 62.7 64.1															
73 74 74 70 70	78 80 82 78 76	80 82 80 78 78	78 80 80 76 74	76 78 74 76 72	74 75 73 73 74	78 78 77 78 78	72 74 68 72 73	66 66 65 66	70 74 66 68	82 82 81 82 82	70 72 68 70 72	70 72 71 67 69	70 75 65 73	75 76 75 73	74 78 74 73	73.2 75.0 73.6 72.1 72.2															
71 69 70	77 80 74 76	74 78 69 73	75 72 69 74	73 75 69 74	69 61 66 68	73 74 66 68	77 80 65 74	69 67 66 68	64 63 56 56	67 70 60 64	79 77 75 79	68 70 62 64	71 72 62 70	72 72 68 63	72 74 69 72	70.5 72.0 66.4 68.7															
63 73 74	73 79 76	78 76 76	77 77 76	71 75 76	72 68 78	70 75 84	75 78 86	64 64 76	66 68 80	82 84 76	70 69 74	66 69 74	66 70 74	76 72 73	75 74 75	68 74 74	69.6 72.2 74.6														
72 79	74	74	72	67	72	79	69	62	65	74	68	68	72	72	70	70.3															
76 76 76	78 74 74	72 73 72	70 71 69	63 62 64	66 64 68	74 72 75	66 71 62	58 58 58	63 60 66	71 68 74	66 70 62	62 60 64	70 71 70	67 66 68	68 68 67	67.7 67.1 68.2															

## DAILY AND MONTHLY MEAN

STATIONS.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<i>Champlain Valley.</i>	70	70	68	67	64	68	69	72	64	62	68	69	66	65
Plattsburgh Barracks	70	70	68	67	64	68	69	72	64	62	68	69	66	65
Glens Falls														
<i>St. Lawrence Valley</i>	72	73	68	68	64	67	69	72	61	68	65	64	69	71
Malone	70	70	66	65	63	64	66	74	62	58	65	62	64	66
Madison Barracks	72	72	68	68	64	67	71	76	64	61	62	66	72	70
Watertown	70	73	71	72	63	70	68	77	63	64	65	62	72	74
<i>Canton</i>														
North Hammond	76	77	72	70	65	71	74	60	58	69	68	67	76	77
Ogdensburg	74	74	66	66	62	67	70	71	60	66	69	65	69	71
Potdam	71	72	66	66	68	65	68	76	61	61	62	61	61	67
<i>Great Lakes</i>	70	73	69	65	68	65	71	77	66	68	66	70	72	74
Dunkirk	68	70	68	62	62	64	70	73	66	64	63	74	72	74
Buffalo	70	72	70	63	67	65	72	76	65	64	66	70	72	74
Eden Centre	78	78	66	63	63	64	74	84	68	58	70	72	70	78
Brockport														
Rochester	72	75	71	66	71	66	74	80	66	62	64	74	72	74
Fort Niagara	65	72	71	67	70	68	69	77	69	68	74	72	72	74
Hess Road Station	65	70	70	64	69	68	68	76	68	62	64	70	72	71
Baldwinsville	72	77	68	68	68	66	73	76	63	64	69	68	72	76
Albion														
Oswego	67	71	69	63	66	66	70	78	61	61	62	66	68	70
Palermo	70	71	70	70	76	66	68	78	65	62	62	62	72	74
Lyons	70	77	70	66	68	67	70	76	66	62	64	70	72	73
Erie, Pennsylvania	70	68	68	62	72	66	74	77	66	62	64	75	77	76
<i>Central Lakes</i>	71	73	73	66	69	68	70	80	68	63	64	69	74	73
Fleming	75	79	74	67	70	69	77	81	68	63	63	66	72	75
Geneva	70	72	76	66	69	66	70	80	69	63	65	63	74	72
Watkins	72	76	74	67	67	68	72	79	67	66	68	72	76	70
Romulus	71	70	70	66	69	68	65	80	68	62	66	68	73	72
Ithaca	69	69	70	63	69	68	68	78	67	62	53	69	74	74
Monthly means	68.9	71.3	69.4	66.1	66.0	67.1	69.3	74.5	66.3	63.1	64.3	67.7	71.6	70.3

\* Means of tri-daily observations      ‡ Mean of maximum and minimum by the Draper  
 and minimum of the ordinary self-registering thermometers.      The mean from the tri-daily  
 received too late to be used in computing averages.

## TEMPERATURES FOR JULY, 1893 — (Concluded).

15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Monthly mean.
70	77	70	68	66	65	76	74	58	61	64	71	63	68	70	72	69	68.0
70	77	70	68	66	65	76	74	58	61	64	71	62	68	70	72	69	68.0
77	74	72	70	67	64	72	68	60	59	66	73	63	66	69	70	70	67.7
72	73	70	68	65	61	73	66	54	58	58	72	59	66	66	70	66	65.5
78	72	74	72	72	64	68	71	66	62	72	72	68	66	71	70	70	69.1
76	76	73	70	66	63	72	71	60	60	70	76	64	67	72	70	72	69.2
78	77	76	74	74	68	74	66	61	68	73	64	66	66	70	72	73	68.5
79	74	71	69	63	68	75	68	56	50	63	72	61	66	68	69	71	66.3
76	74	70	68	64	62	75	68	56	50	63	72	61	66	68	69	71	66.3
79	77	76	71	69	66	71	75	66	62	74	75	66	69	72	71	73	70.4
75	74	73	71	68	66	68	72	67	62	72	72	66	66	72	69	70	68.8
76	74	74	70	70	66	74	75	68	60	71	76	66	68	72	70	74	70.0
80	80	72	62	70	68	68	75	58	58	68	64	61	72	73	65	78	69.6
82	77	78	70	68	66	74	77	64	61	78	76	65	68	74	72	76	71.0
81	80	79	74	74	70	70	80	72	68	82	79	71	73	70	75	76	73.4
78	78	76	72	72	67	70	78	70	64	74	78	67	67	72	70	71	70.3
78	77	77	73	68	68	76	73	64	64	76	72	71	71	70	71	72	71.0
79	74	76	69	68	64	70	74	68	62	74	74	64	68	70	68	71	69.0
78	76	76	70	66	63	72	73	69	63	70	77	66	67	72	72	72	69.6
80	78	78	78	66	66	71	77	64	60	74	77	64	66	73	75	73	70.7
81	76	75	71	70	67	70	74	67	62	76	78	66	70	72	70	77	71.0
77	77	77	71	69	68	72	77	66	60	76	79	66	67	73	71	74	71.0
80	77	77	73	67	67	75	79	64	59	78	77	66	67	72	70	76	71.7
81	79	78	74	68	67	71	76	66	61	74	78	64	66	74	72	74	71.1
80	71	78	66	73	74	74	78	71	62	82	78	68	74	72	74	74	72.4
80	80	74	68	70	68	72	78	68	60	74	80	64	66	74	69	74	70.5
77	76	76	72	68	64	70	76	62	58	72	80	67	60	72	70	74	69.4
74.4	76.1	73.9	71.4	68.9	65.7	69.8	73.6	64.0	60.6	68.6	74.6	65.1	65.8	70.2	70.1	70.6	68.9

thermograph. Means for all stations not otherwise indicated are derived from the maximum observations are derived by the formula  $(7 \text{ a. m.} + 2 \text{ p. m.} + 9 \text{ p. m.}) \div 4$ . [Reports



## DAILY AND MONTHLY PRECIP

STATIONS.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Western Plateau...	0.00	0.02	0.30	0.01	0.11	0.01	0.01	0.51	0.02	0.00	T.	0.10	0.37	0.15
Alfred Centre								1.20					.95	
Angelica		T.	.15		.01			.41					.30	
Bollivar														
Friendship			.07			T.		.38					.35	
Humphrey			.55		.02			.27				.35	.15	
Little Valley														
Cherry Creek		.38			T.			.36	.01				.38	.10
Elmira			.10			.05		.16					.90	1.01
Akron			.53		.04	T.		.03				.26	.67	T.
LeRoy			1.05		.10			.17				.13	.55	.02
Avon														
Mt. Morris			.18		.02			.25				.04	.26	
Lockport			.44		.31						T.	.40	.14	
Victor			.37		T.			1.09				.32	.19	
Wedgewood			.35		.27	.13		.52				.10	.20	.03
Addison			.18		.14			.28					.26	.16
Atlanta					.59	T.		.32	.36			.02	.23	.51
Pine City			.19					.35				T.	.43	1.14
South Canisteo		T.	.15		.07		.11	.75				.28	.09	
Arcade			.54		.11			.80				T.	.23	
Attica														
Castile			.30	.20	.08			.73					.29	
Varysburg			.35		.20	T.		.47					.56	
Eastern Plateau...	0.00	0.00	0.43	0.05	0.39	T.	0.00	0.86	0.07	0.00	0.00	0.26	0.12	0.01
Binghamton			.80	.29	.83			.88				.07	.20	.03
Chenango Forks			.30										.35	
Oxford			.51	.03	.46			.82	.56			.52	T.	
Cordland			.60		.23			1.52	.42			.22		
Bovina Centre														
Deposit														
South Kortright			.34		.64			.80				.47		
Brookfield			.23					1.05				.80	.10	
Apulia														
Middletown			T.	.47	.70			.42				.07		
Port Jervis					.89			.42				.10	.08	.03
Warwick														
Cooperstown			.34		.15			.95				.52		
New Lisbon			.35		.37			1.11				.24	.04	
Quaker Street														
Perry City			1.03		.33			1.56				.13	.30	
Newark Valley			.56		.44			1.35				.05	.07	.02
Waverly			.18			T.		.02				.60	.44	T.
Ellis			.73		.26	.05		1.91	.04			.21	.20	.04
Newfield Summit														
Minnewaska					.30			.38				.07		
Northern Plateau...	0.41	0.10	0.55	T.	0.40	T.	0.00	0.34	T.	T.	0.00	0.20	T.	0.00
West Chazy			.89	T.	.12			.72	T.	T.				
An Sable Forks														
Keene Valley														
Ampersand	*	+ .83	.67		.54			.25						
Gloversville			.54		.15	.04		.62	.03	T.		.42	T.	
Blue Mt. Lake														
Bisby Lodge														
Constableville			.82		T.			T.				T.		
Lowville			.69		.77			.04				.52	.03	
Number Four	1.23	.78			.68							*	+ .43	
Turn	.02		.64		.36			.37				.35		
Boonville	.07		.26		.55			.50				.18		
Galway														
King's Station	1.95		.35		.45			.53		.04		.36		

## STATE METEOROLOGICAL BUREAU.

165

TATION FOR JULY, 1893 — (INCHES).

15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total.
0.35	0.23	0.08	0.01	0.00	T.	0.00	0.10	0.06	0.00	T.	0.30	0.00	0.04	0.12	0.00	0.27	3.02
.53	....	.06	....	....	....	....	.02	....	....	....	.09	....	.15	....	....	....	3.02
.25	.20	.23	.02	....	....	....	T.	....	....	....	.08	....	....	.16	....	.08	1.79
.40	.35	.08	.01	....	....	....	T.	....	....	....	T.	....	....	.22	....	....	2.01
1.30	....	.10	.10	....	....	....	.38	....	....	....	.15	....	....	.19	....	.25	3.66
.07	.09	.02	T.	....	....	....	....	.63	....	T.	.26	....	....	....	....	.10	2.40
.80	.25	....	....	....	....	....	.18	....	....	....	.02	....	....	.42	....	....	3.89
....	*	+.22	....	....	....	....	....	....	....	....	1.48	....	....	.18	....	.76	4.17
.05	....	T.	....	....	....	....	.30	....	....	....	.40	.60	....	....	....	.30	3.67
.18	.08	T.	T.	....	....	....	....	....	....	....	.17	....	....	.05	....	.75	1.97
T.	.46	.24	....	....	....	....	T.	....	....	....	1.97	....	....	....	1.20	4.78	
.01	.46	T.	....	....	....	....	.80	....	....	....	.47	....	....	.38	....	.45	4.04
1.75	.05	....	T.	....	....	....	.08	....	....	....	.06	....	....	.04	....	....	3.55
.35	.20	.15	....	....	....	....	.40	....	....	....	....	....	....	.25	....	....	2.87
.07	....	....	....	....	T.	....	....	T.	....	....	.11	....	....	.11	....	....	2.32
T.	.69	.01	....	....	....	....	....	.51	....	....	....	....	.39	....	....	....	3.71
.36	.40	.05	....	....	....	....	.32	....	....	....	.05	....	....	.15	....	T.	2.70
.50	.45	T.	....	....	....	....	T.	....	....	....	T.	....	....	T.	....	.25	2.88
....	.30	.12	....	....	....	....	....	....	....	....	....	....	....	.10	....	....	1.97
T.	....	.18	.07	....	....	....	T.	....	....	T.	.39	....	....	.10	....	.96	3.23
0.33	0.09	0.04	0.12	0.00	0.00	0.00	0.26	0.13	0.00	T.	0.40	0.09	0.02	0.37	0.00	T.	3.96
....	.23	.03	.04	....	....	....	.40	.83	....	....	.10	....	....	.27	....	....	4.10
....	....	....	....	....	....	....	.10	....	....	....	.20	....	.40	....	....	....	2.15
1.02	.10	....	.15	....	....	....	....	....	....	....	.91	.10	....	.73	....	....	6.01
.25	....	.07	....	....	....	....	....	....	....	....	.96	....	....	.30	....	....	4.57
....	....	.14	.30	....	....	....	....	.90	....	....	.47	.60	....	.18	....	....	....
....	.22	....	.14	....	....	....	.18	....	....	....	.71	....	....	....	....	....	3.50
....	.32	.10	....	....	....	....	.10	....	....	....	.65	....	....	.96	....	....	4.33
....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
.06	T.	.12	T.	....	....	....	....	.07	....	....	....	....	....	.30	....	....	2.23
....	.18	....	....	....	....	....	....	.29	....	....	.25	.75	....	.45	....	....	3.33
.45	....	.05	.65	....	....	....	.15	....	....	....	.96	....	....	.63	....	....	4.85
.50	....	.01	.81	....	....	....	.58	....	....	....	.57	....	....	.60	....	....	5.13
....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
.84	T.	.08	....	....	....	....	.55	....	....	T.	.02	....	....	.18	....	.02	4.99
.15	.15	.06	.06	....	....	....	.55	....	....	....	.28	....	....	.24	....	....	4.00
.57	.52	.02	....	....	....	....	.81	....	....	....	.03	....	....	.51	....	....	3.55
....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
.53	.05	.03	....	....	....	....	.66	....	....	....	.05	....	....	.31	....	....	5.07
....	....	.16	.10	....	....	....	.06	....	....	....	.24	....	....	.30	....	....	1.60
0.16	0.00	0.03	0.06	0.02	0.00	0.04	0.16	0.07	0.09	0.06	0.18	?	0.05	0.06	0.00	0.16	3.46
.53	....	.11	.04	.05	....	....	.42	.24	....	....	*	+.84	.20	....	....	T.	4.16
....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
.66	....	....	....	....	....	....	1.28	.44	.37	.43	.23	....	....	....	....	....	5.70
.02	....	T.	....	....	....	....	.15	T.	....	T.	.60	....	....	.12	....	....	2.69
....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
T.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
.22	....	.06	....	....	....	....	.18	....	....	....	.19	....	....	.10	....	1.22	2.04
....	....	....	....	....	....	....	.40	....	....	.44	....	....	....	....	....	....	2.79
.04	....	.04	....	....	....	....	.18	T.	....	....	.26	....	.25	.18	....	.18	4.27
....	....	....	....	....	....	....	.06	....	....	....	.02	....	....	.06	....	....	2.58
....	....	.08	T.	....	....	....	....	....	....	....	....	....	....	....	....	....	1.83
....	....	....	.66	.15	....	....	.15	....	....	....	.31	.16	....	.10	....	....	5.11

## DAILY AND MONTHLY PRECIP

STATIONS.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<i>Coast Region</i> .....	0.00	0.00	0.08	T.	0.21	0.83	0.08	0.89	0.02	0.00	0.00	T.	0.11	0.01
New York city .....			.06	T.		.09		.17	.01			T.	T.	.08
Willet's Point .....						.80	.40					T.		
Brentwood .....					.90			.35						
Setauket .....			T.		.01	.17		.47				T.	.80	
Bedford .....			.09		.15	.60		.98	.09				.26	
<i>Hudson Valley</i> .....	0.11	T.	0.22	0.04	0.22	0.29	0.04	0.47	0.22	0.00	0.00	0.10	0.14	0.01
Albany .....	T.	.02	.48		.02			.50				.18		
Bethlehem Centre .....														
Lebanon Springs .....	.90		.27		.26			.38				.26		
Honeymead Brook .....			.58		.73	T.		.58	.36			.25	.36	
<i>Pawling</i> .....														
Poughkeepsie .....						.75		.01						
Wappinger's Falls .....			.25		.19	.51		1.04				.06	.10	
West Point .....			.30	.40	*	1.30	.40						.30	
Boyd's Corners .....														
<i>Carmel</i> .....														
South E. Reservoir .....														
Schoodack Depot .....														
Stillwater .....	.05		.28		.12			1.21	.02			.15		
Rondout .....					.40			.50						
Easton .....			.21			.99			1.60				.31	.08
<i>Mohawk Valley</i> .....	0.02	0.00	0.50	0.20	0.28	0.24	0.00	0.83	0.37	0.00	0.00	0.06	0.06	0.00
Rome .....	.04			.41		.31		.08	.74				.12	
Utica .....			1.00		.58	.18		1.58				.11		
<i>Champlain Valley</i> .....	0.00	0.00	1.05	0.00	0.24	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00
Plattsburgh Barracks .....			1.05		.24			.25						
Fort Henry .....														
Glens Falls .....														
Whitehall .....														
<i>St. Lawrence Valley</i> .....	0.00	0.00	0.27	T.	0.34	0.01	0.00	0.39	0.14	0.00	0.00	0.20	0.00	0.00
Malone .....			.24	.02	.09	.04		.31	.89			T.		
Madison Barracks .....			.58		.69			.17				.32		
Watertown .....			.36		.69			.07				.39		
Canton .....														
<i>DeKalb Junction</i> .....			.38		.28			1.21				.35		
North Hammond .....			.15		.15			.30				.28		
Ogdensburg .....			.11		.10			.05				.08		
Potsdam .....			.08		.16			.66						
<i>Great Lakes</i> .....	0.00	0.02	0.40	0.03	0.23	0.10	T.	0.56	0.10	0.00	0.02	0.08	0.17	0.05
Dunkirk .....		.20		.07	.01			.35				.07	.35	.02
Buffalo .....			.09		.10	T.		.21				T.	.17	T.
Eden Centre .....			.32		.15	T.		.50				T.	.84	.50
Adams Centre .....														
<i>Brockport</i> .....														
Rochester .....			.58		.20	.02		.02				.08	.06	.01
Fort Niagara .....			.30		.25			.10			.22	.14	.37	.10
Hess Road Station .....			.31		.83			.06				.12	.17	
<i>Baldwinsville</i> .....			1.08		1.09			1.34				.42		
Albion .....														
Lyndonville .....														
Demeter .....			.27		.08	.08		.35				.12		
Oswego .....			.41		.09	.06		.02				.05	T.	
<i>Palermo</i> .....			.32		.15			.08				.06		
Phoenix .....			.92	.30		.62		.55	1.31				.24	
Lyons .....			.37			.49		2.25						
Erie, Pennsylvania .....			.20		T.	.06	T.	.49					.06	.01
<i>Central Lakes</i> .....	0.00	0.05	0.46	0.00	0.27	0.00	0.00	0.77	0.00	0.00	0.00	0.14	0.08	0.00
Fleming .....			.41		.40			.65						
Geneva .....			.45		.31			.10				.24	.04	
Watkins .....		.23	.16		.40			.31				.15	.25	

TATION FOR JULY, 1893 — (Continued).

15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total.
0.02	0.04	0.19	0.01	0.00	0.00	0.00	0.00	T.	0.00	0.00	0.30	0.08	0.00	0.20	0.00	0.03	2.04
....	.18	....	....	....	....	....	....	....	....	....	.37	.14	....	.21	....	.15	1.26
.10	....	....	....	....	....	....	....	....	....	....	.32	....	....	....	....	....	1.77
....	T.	.50	....	....	....	....	....	T.	....	....	.45	....	....	.20	....	....	1.90
....	.45	.07	....	....	....	....	....	.02	....	....	.11	.11	....	.21	....	....	1.88
0.08	T.	0.18	0.16	T.	0.00	0.00	0.15	0.12	0.00	0.05	0.28	0.04	0.00	0.21	0.00	0.00	3.29
....	....	.02	T.	.03	....	....	.08	.01	....	T.	.35	....	....	.23	....	....	1.82
....	....	....	....	....	....	....	....	.65	....	....	.91	....	....	.21	....	....	3.84
....	....	.11	.40	....	....	....	....	.04	....	....	.28	.02	....	.41	....	....	4.12
....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
....	.01	.27	.01	....	....	....	.58	....	....	.01	.01	....	....	.08	....	....	1.68
....	.01	.08	.16	....	....	....	.20	....	....	....	.01	.20	....	.07	....	....	3.13
.30	....	.31	.03	....	....	....	.15	....	....	....	.50	.15	....	.40	....	....	4.53
....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
....	....	....	.23	....	....	....	.16	.02	....	.12	.45	....	....	.08	....	....	2.89
....	....	.20	.60	....	....	....	....	....	....	....	....	....	....	.42	....	....	2.12
....	....	.69	.5	....	....	....	.57	T.	....	.32	.60	....	....	.11	....	....	5.45
0.08	0.06	0.10	0.22	0.16	0.00	0.00	0.18	0.09	0.00	T.	0.48	0.16	0.04	0.06	0.00	0.00	4.14
....	.11	.30	.30	....	....	....	.37	.18	....	....	.28	.32	....	.07	....	....	2.96
.05	....	.19	.18	.38	....	....	....	T.	....	T.	.68	....	....	.12	....	....	5.32
0.18	0.00	0.42	0.00	0.10	0.00	0.00	0.38	0.18	0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.00	3.34
.15	....	.42	....	.10	....	....	.38	.18	....	....	....	....	....	.12	....	....	3.34
....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
0.01	0.00	0.31	0.00	0.01	0.01	0.00	0.70	0.06	0.00	0.21	0.30	0.09	0.00	0.65	0.00	T.	3.14
....	....	.88	....	.08	....	....	.77	.12	....	.86	.60	.23	....	.04	....	....	5.17
....	....	.02	....	....	....	....	.03	....	....	....	....	.33	....	.12	....	....	2.26
....	....	.01	....	....	....	....	.02	.08	....	T.	.36	....	....	.07	....	T.	2.20
....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
....	....	T.	....	....	....	....	2.88	....	....	.10	.17	....	....	.07	....	....	5.44
....	....	.26	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
....	....	.34	....	....	....	....	.19	....	....	.28	.05	....	....	....	....	T.	1.20
.06	....	.67	....	....	....	....	.29	.05	....	....	.61	....	....	....	....	....	2.58
0.21	0.32	0.02	T.	0.00	0.00	0.00	0.07	0.04	0.00	0.05	0.26	0.00	0.03	0.05	0.00	0.33	3.14
....	.08	.06	....	....	....	....	.11	....	....	....	.11	....	....	.22	....	.34	1.94
.18	T.	.01	....	....	....	....	T.	....	....	....	.54	....	T.	.07	....	.07	1.44
....	....	.20	....	....	....	....	....	....	....	.50	....	....	.27	....	....	1.10	4.38
....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
....	T.	.74	.02	....	....	....	.18	....	....	....	.56	....	....	T.	....	.45	2.87
....	.32	....	....	....	....	....	....	....	....	....	.12	....	T.	....	....	.86	2.78
.39	....	.15	....	....	....	....	....	....	....	....	.26	....	....	....	....	.45	2.74
1.20	....	T.	....	....	....	....	.16	....	....	.14	.27	....	.06	....	....	.29	7.05
....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
.18	....	....	....	....	....	....	.08	....	....	....	.44	....	....	.10	....	.14	1.84
.10	....	T.	T.	....	....	....	T.	....	....	....	.23	....	....	.04	....	.17	1.16
....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
.30	....	....	....	....	....	....	.22	....	....	....	.28	....	....	.06	....	.02	1.49
....	2.80	....	....	....	....	....	....	....	....	....	.30	....	....	.05	....	....	7.09
T.	.42	....	....	....	....	....	....	....	....	....	.26	....	....	.04	....	.41	4.24
T.	.09	.02	.04	....	....	....	.13	.58	....	....	....	....	....	.12	....	....	1.79
0.22	0.30	0.01	0.05	0.00	0.00	0.00	0.22	0.00	0.00	0.02	0.18	0.01	0.06	0.05	0.00	0.47	3.35
.10	.51	....	T.	....	....	....	.24	....	....	.10	.50	....	....	....	....	1.00	3.67
1.12	.35	.02	....	....	....	....	....	....	....	....	.38	....	.15	....	....	.92	3.23
....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2.51

## REPORT OF THE DIRECTOR OF THE

## DAILY AND MONTHLY PRECIP

STATIONS.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<i>Cent. Lakes (Con.)</i>														
Romulus .....			.57		.09			.18				.16		
Ithaca .....			.70		.14			2.70				.13	.12	
Penn Yan .....														
Average .....	0.05	0.02	0.80	0.03	0.27	0.10	0.01	0.54	0.09	T.	T.	0.11	0.10	0.02

\* Amount included in next measurement.  
averages.

† Not used in computing the averages.

TATION FOR JULY, 1893 — (*Concluded*).

15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total.
T.	.16	.....	.24	.....	.....	.....	.18	.....	.....	.....	.....	.05	.13	.....	.....	.44	2.20
.38	.....	.01	.....	.....	.....	.....	.70	.....	.....	.....	.02	.....	.....	.28	.....	.....	5.13
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
0.16	0.09	0.14	0.06	0.29	T.	T.	0.22	0.07	0.01	0.04	0.27	0.05	0.02	0.13	0.00	0.13	3.29

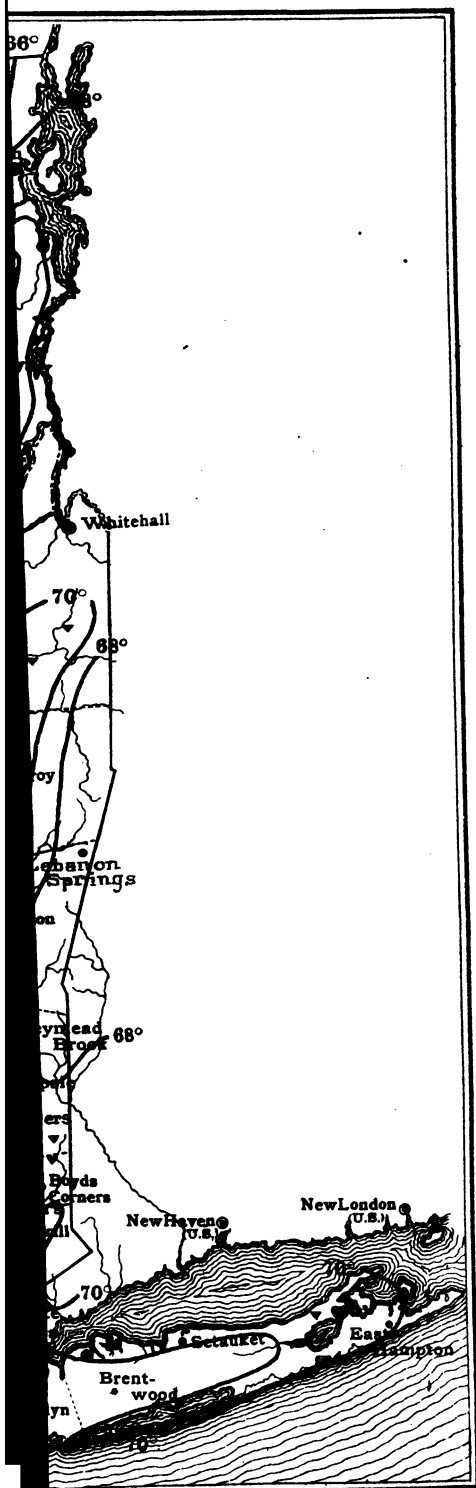
‡Record for the month incomplete.

‡ Reports too late to be used in computing the

## TEMPERATURE AND

STATION.	County.	TEMPERATURE — (DEGREES FAHR.)									
		Normal for the month of July.	Length of record, years.	Record begins.	Record ends.	Mean for July, 1893.	Departure from the normal.	EXTREMES MONTHLY MEAN TEMPERATURE FOR JULY			
								Highest.	Year.	Lowest.	
<i>Western Plateau</i> .....		69.1				68.8	-0.3				
Angelica*	Allegany	68.1	11	1854	1893	66.6	-1.5	71.3	1856	64.8	
Humphrey .....	Cattaraugus	68.0	10	1854	1893	66.5	-1.5	69.6	1859	62.9	
Elmira*	Chemung	71.2	14	1851	1893	73.3	+2.1				
<i>Eastern Plateau</i> .....		68.6				68.2	-0.4				
Cooperstown .....	Otsego	68.2	40	1854	1893	55.6	-2.6	76.0	1868	62.7	
Waverly .....	Tioga	69.0	11	1882	1893	70.7	+1.7	74.5	1887	65.6	
<i>Northern Plateau</i> .....		67.8				65.6	-2.2				
Lowville .....	Lewis	67.8	25	1827	1893	65.6	-2.2				
<i>Coast Region</i> .....		72.6				73.6	+1.0				
New York City .....	New York	73.6	25	1871	1893	75.0	+1.4	76.7	1887	70.1	
Setauket .....	Suffolk	71.6	7	1855	1893	72.1	+0.5	75.4	1887	68.1	
<i>Hudson Valley</i> .....		72.2				71.2	-0.9				
Albany .....	Albany	72.1	20	1874	1893	72.0	-0.1	76.6	1887	69.1	
Honeymead Brook .....	Dutchess	69.4	10	1884	1893	68.7	-0.7	74.0	1887	66.7	
Poughkeepsie*	Dutchess	72.8	22	1828	1893	69.6	-3.2				
West Point .....	Orange	74.1	64	1824	1893	74.6	+0.5	80.2	1868	65.4	
Rondout*	Ulster	72.4	22	1828	1892			76.5	1842	65.3	
<i>Mohawk Valley</i> .....		69.0				68.2	-0.8				
Utica*	Oneida	69.0	33	1826	1893	68.2	-0.8	75.0	1838	63.0	
<i>Champlain Valley</i> .....		69.5				68.0	-1.5				
Plattsburgh Barracks .....	Clinton	69.5	33	1839	1893	68.0	-1.5	73.8	47-70	65.2	
<i>St. Lawrence Valley</i> .....		70.2				67.7	-1.4				
Madison Barracks .....	Jefferson	70.0	29	1829	1893	69.1	-0.9	74.6	1830	65.9	
Canton*	St. Lawrence	70.8	30	1862	1892			75.4	1878	63.6	
North Hammond .....	St. Lawrence	71.9	15	1866	1892			79.9	1868	65.1	
Potsdam*	St. Lawrence	63.1	24	1828	1893	66.3	-1.8	73.6	1838	63.3	
<i>Great Lakes</i> .....		69.3				70.7	+1.4				
Buffalo .....	Erie	69.6	23	1871	1893	70.0	+0.4	73.5	1878	64.9	
Rochester .....	Monroe	70.2	22	1871	1893	71.0	+0.8	74.2	1887	65.1	
Fort Niagara .....	Niagara	70.7	25	1829	1893	73.4	+2.7				
Baldwinsville .....	Onondaga	68.9	19	1849	1893	71.0	+2.1				
Oswego .....	Oswego	69.2	23	1871	1893	69.0	-0.2	74.5	1878	64.5	
Palermo .....	Oswego	67.5	40	1854	1893	69.6	+2.1	79.1	1868	62.9	
Lyons .....	Wayne	66.9	8	1880	1893	70.7	+3.8				
Erie, Pennsylvania .....	Erie	71.3	20	1874	1893	71.0	-0.3	76.0	1887	66.0	
<i>Central Lakes</i> .....		70.0				70.2	+0.2				
Geneva .....	Ontario	70.1	16	1854	1893	71.1	+1.0				
Ithaca .....	Tompkins	70.0	15	1879	1893	69.4	-0.6	74.8	1887	66.0	
Average departure ..							0.0				

\* Location of the instruments has been changed.

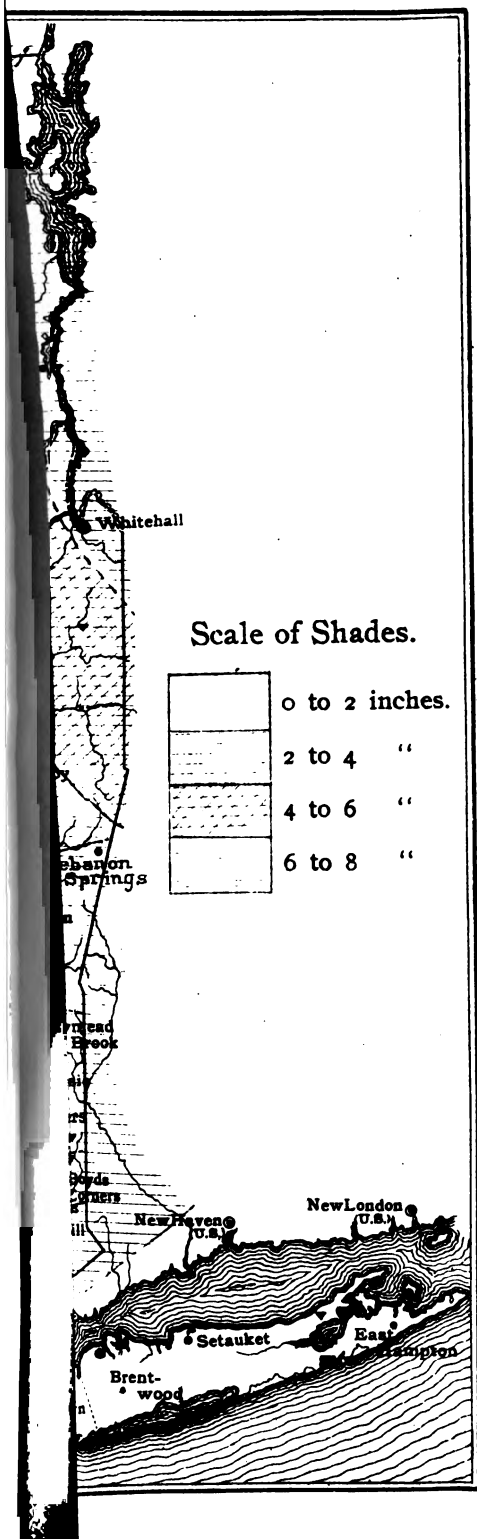




11

THE FINEST OF THE ARTISTS







## FALL STATISTICS FOR JULY, 1893.

STATION.	County.	RAINFALL (INCHES).									
		Average for the month of July.	Length of record, years.	Record begins.	Record ends.	Total for July, 1893.	Departure from the average.	EXTREMES OF MONTHLY PRECIPITATION FOR JULY.			
								GREATEST.		LEAST.	
								Amount.	Year.	Amount.	Year.
<i>Western Plateau.</i>		3.42	...	...	...	3.11	-0.30	...	...	...	...
Angelica	Allegany	3.26	7	1871	1893	1.79	-1.47	5.00	1889	1.79	1893
Humphrey	Cattaraugus	4.26	10	1884	1893	3.66	-0.60	7.22	1891	2.38	1885
Elmira	Chemung	2.73	14	1851	1893	3.89	+1.16	4.80	1885	1.40	1853
<i>Eastern Plateau.</i>		4.24	...	...	...	3.91	-0.33	...	...	...	...
Cooperstown	Otsego	4.28	40	1854	1893	4.85	+0.57	7.92	1863	0.89	1868
Port Jervis	Orange	5.27	9	1880	1893	3.33	-1.94	7.42	1891	3.33	1893
Waverly	Tioga	3.18	12	1882	1893	3.55	+0.37	7.19	1887	2.36	1891
<i>Northern Plateau.</i>		3.51	...	...	...	2.79	-0.72	...	...	...	...
Lewville	Lewis	3.51	23	1827	1893	2.79	-0.72	...	...	...	...
<i>Coast Region.</i>		4.28	...	...	...	1.57	-2.72	...	...	...	...
New York City	New York	4.31	23	1871	1893	1.26	-3.05	9.63	1889	1.26	1893
Setauket	Suffolk	4.26	9	1885	1893	1.88	-2.38	7.43	1886	1.44	1885
<i>Hudson Valley.</i>		4.21	...	...	...	3.15	-1.16	...	...	...	...
Albany	Albany	3.77	20	1874	1893	1.82	-1.95	6.18	1874	1.78	1885
Honeymead Brook	Dutchess	4.99	10	1884	1893	4.12	-0.87	8.99	1889	2.74	1886
West Point	Orange	4.58	46	1840	1893	4.53	-0.05	10.48	1853	1.10	1872
Boyd's Corners	Putnam	4.28	10	1866	1893	...	...	7.19	1889	2.18	1868
Rondout	Ulster	3.91	24	1830	1893	2.12	-1.79	9.05	1889	0.60	1849
<i>Mohawk Valley.</i>		4.58	...	...	...	5.35	+0.74	...	...	...	...
Utica	Oneida	4.58	39	1826	1893	5.32	+0.74	7.60	1827	1.72	1836
<i>Champlain Valley.</i>		3.41	...	...	...	3.34	-0.07	...	...	...	...
Plattsburgh Barracks	Clinton	3.41	32	1840	1893	3.34	-0.07	9.18	1874	0.95	1819
<i>St. Lawrence Valley.</i>		3.46	...	...	...	3.34	-0.35	...	...	...	...
Malone	Franklin	3.93	13	1830	1893	5.17	+1.24	...	...	...	...
Madison Barracks	Jefferson	2.98	33	1840	1893	2.26	-0.72	7.67	1851	0.38	1881
North Hammond	St. Lawrence	2.75	15	1866	1893	...	...	10.31	1873	1.00	1868
Potsdam	"	4.16	25	1828	1893	2.58	-1.58	7.87	1889	1.10	1841
<i>Great Lakes.</i>		3.06	...	...	...	1.92	-1.14	...	...	...	...
Buffalo	Erie	3.36	23	1871	1893	1.44	-1.92	7.19	1873	1.19	1882
Rochester	Monroe	3.02	22	1871	1893	2.87	-0.15	4.61	1879	1.07	1886
Fort Niagara	Niagara	2.83	36	1841	1893	2.78	-0.05	6.37	1850	0.62	1882
Oswego	Oswego	3.24	23	1871	1893	1.16	-2.08	5.89	1877	1.12	1882
Palermo	"	3.22	40	1854	1893	1.49	-1.73	6.60	1874	0.64	1882
Erie, Pennsylvania.	Erie	2.68	20	1874	1893	1.79	-0.89	7.03	1874	0.76	1890
<i>Central Lakes.</i>		3.56	...	...	...	4.18	+0.68	...	...	...	...
Geneva	Ontario	3.08	25	1841	1893	3.23	+0.15	5.31	1889	0.85	1868
Rhaca	Tompkins	3.93	15	1879	1893	5.13	+1.20	6.73	1889	1.24	1890
Average departure.		...	...	...	...	...	-0.71	...	...	...	...

during the period covered by the record.

## Meteorological Summary for August, 1893.

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The average atmospheric pressure (reduced to sea-level and 32 degrees Fahr.) for the State of New York during August was 29.98 inches. The highest barometer was 30.28 inches at Ithaca on the fourteenth; and the lowest was 29.15 inches, also at Ithaca, on the twenty-ninth. The mean pressure was greatest in the western part of the State, and least near the Atlantic coast. The mean pressure at six stations of the National Bureau was about .01 inch below the normal; being above the normal only at Rochester and Buffalo.

The mean temperature for the State was 68.0 degrees; the highest general daily mean, 76.7 degrees, occurring on the eleventh, and the lowest, 60.9 degrees on the thirty-first. The highest local monthly mean was 74 degrees at West Point; and the lowest was 62.4 degrees at Number Four, Lewis county. The maximum temperature reported during the month was 99 degrees at Eden Centre on the eighth; and the minimum was 33 degrees at South Kortright on the fourteenth. The mean monthly range of temperature for the State was 46.0 degrees; the greatest range, 62.0 degrees, occurring at Eden Centre, and the least, 32 degrees, at Setauket. The mean daily range for the State was 21.0 degrees; the maximum daily range being 47 degrees at Eden Centre on the twenty-fourth; and the minimum, 2.0 degrees at Lyon Mountain on the seventeenth. The mean temperatures for the various sections of the State were as follows: The Western plateau, 66.7 degrees; the Eastern plateau,

67.0 degrees; the Northern plateau, 64.5 degrees; the Coast region, 72.0 degrees; the Hudson valley, 70.5 degrees; the Mohawk valley, 68.4 degrees; the Champlain valley, 65.4 degrees; the St. Lawrence valley, 67.3 degrees; the Great Lake region, 68.5 degrees; and the Central Lake region, 69.7 degrees. The average of the mean temperatures at twenty-six stations possessing records for previous years was 1.5 degrees above the normal value. At Setauket the mean was the highest recorded during nine years' observations.

The mean relative humidity was 74 per cent. The mean dew point was 59 degrees.

The average precipitation for the State was 6.32 inches of rain, as derived from the records of eighty-six stations. The heaviest precipitation occurred over the Northern plateau, exceeding 8 inches; and equally heavy rains also obtained over a restricted portion of the Eastern plateau. The smallest general rainfall occurred near the Central lakes and the extreme southwestern section, where the amounts were less than 4 inches. The greatest local rainfall was 12.48 inches at Easton, Washington county; and the minimum was 2.01 inches at Fleming, Cayuga county. Data upon heavy rainfall will be found in the table of meteorological data. The greatest daily precipitation occurred during the passage of West India cyclones, as detailed below; the first storm giving an average of 1.60 inches in the Coast region, on the twentieth; the second, averages of 2.85 inches on the coast, and 3.19 inches in the Hudson valley, on the twenty-fourth; while on the twenty-ninth heavy rains occurred in all sections, the average for the State being 1.66 inches. The average number of days on which the precipitation amounted to 0.01 inch or more was 9.4; the maximum number occurring over the Eastern plateau, the Mohawk valley,

and the extreme northern section, while the least rain frequency was found in portions of the Great Lake region.

The average number of clear days for the State was 11.2; of partly cloudy days, 12.3; and of cloudy days, 7.5. The mean cloudiness for the State was 47 per cent (overcast—100 per cent). The minimum cloudiness obtained over the Great Lake region, and the maximum over northern New York.

The prevailing wind direction was from the west. The average wind travel at six stations of the National Bureau was 5,867 miles; the travel being generally in excess of the average values. The maximum velocity recorded was 54 miles per hour at New York city on the twenty-ninth.

Thunderstorms were reported as follows: On the first at Honeymead Brook; on the second at Utica; on the fifth at Honeymead Brook; on the sixth at twelve stations distributed over all regions excepting the southeast; on the seventh at two stations of the Hudson valley; on the eleventh at three stations of Allegany and Erie counties; on the twelfth at four stations of central and eastern New York; on the seventeenth at Eden Centre and Waverly; on the eighteenth at five stations of the northern, central and western sections; on the nineteenth at five stations of central and eastern New York; on the twentieth at six stations of the Eastern and Northern plateaus; on the twenty-fourth at Brookfield; on the twenty-fifth at five stations of central New York, and at Angelica; on the twenty-seventh at fourteen stations of the Central and Northern plateau and the Hudson valley; on the twenty-eighth at four stations of the Central plateau and at Eden Centre.

Hail fell at South Kortright on the twelfth, at Angelica and Cooperstown on the twenty-fifth; and on the twenty-seventh at

Baldwinsville and Rome, the storm at the latter point being phenomenally severe, and causing great damage to property.

Light frosts occurred in the higher valleys of the Central plateau on the fourteenth.

Solar halos were observed on the fourteenth; and lunar halos on the sixteenth.

The data for this summary have been obtained from the records of sixty voluntary observers, six stations of the National Bureau, five military posts and fifteen special rainfall observers.

During August the weather of New York was influenced by five areas of high and eight areas of low pressure; the latter number being less than the average for previous Augusts. Between the first and nineteenth four depressions of slight or moderate intensity passed eastward over Canada and northern New York, being nearest this State on the first, fourth, fifth, eleventh and seventeenth. All showed a tendency to linger over the northeastern coast; from which position the third and fourth areas spread toward the southwest, prolonging the rain periods in the vicinity of New York. This period of slight atmospheric disturbance was followed by a remarkable series of West India cyclones or hurricanes, three in number. The first moved northward over the Atlantic to the vicinity of New Jersey, and thence off the coast to the Bay of Fundy; the lowest pressure shown on the weather maps being 29.3 inches on the twenty-first. The second passed centrally over New York city on the twenty-fourth, with a pressure of 29.28 inches, moving northward over eastern New England to the Canadian coast. The third cyclone first touched the continent on the shores of the Carolinas, where it caused an enormous destruction of life and property; and continued its course almost directly northward, passing over central New York to the St. Lawrence valley early on the twenty-ninth,



when the minimum pressure of 29.15 inches was recorded at Ithaca. Immediately preceding this last cyclone a moderate disturbance, which originated near the Pacific coast, passed eastward over Canada to the Gulf of St. Lawrence.

The anticyclonic areas throughout the month were of slight intensity, and no unseasonably low temperatures resulted from their passage near this State. These areas, with their corresponding periods of fair weather, were central in the vicinity of New York respectively on the eighth-tenth, thirteenth-fifteenth, twenty-second-twenty-third, and thirtieth-thirty-first. In addition to this number, a local "clearing condition" developed over the Eastern States and coast on the twenty-sixth.

During the greater part of the month the average temperature of the State departed but little from the normal value; but the mean value for the month was raised 1.5 degrees above the normal by the hot weather of two periods between the ninth and twelfth, and twenty-fourth and twenty-ninth, respectively. The general maximum for the month occurred on the eleventh. The departures below the normal were much less in amount, the only cool periods worthy of remark occurring on and about the fourteenth and thirtieth; light frosts being reported, on the former date, from a few high valleys of the Western plateau.

Hot, bright weather obtained during the first and second weeks of August, and a serious drouth prevailed which was scarcely broken by the light general rains of the first, sixth-seventh and twelfth. During the latter half of the month, however, rains were frequent and heavy, materially improving the condition of all late crops. Violent winds and heavy rains caused a considerable damage to tree fruits in the vicinity of the coast on the twenty-fourth; while the hurricane of the

twenty-ninth occasioned a serious loss of fruit, corn, potatoes, hops and buckwheat in all sections.

Oat-cutting was well under way by the eighth, and the wheat, barley and rye crops had, by that time, been secured in good condition. Prospects for the tree fruits and potato crops were discouraging during the drouth, but showed some improvement later. Grapes maintained an excellent condition, excepting in some vineyards of the Central Hudson valley. Throughout the month the rainfall in the northern section of the State was larger than elsewhere, and crops in that region maintained a vigorous condition.

A loss of barns or other buildings from lightning was reported from New Lisbon, Lowville and Gloversville on the twenty-seventh; from Lebanon Springs on the nineteenth and from Malone on the sixth.

Notes on the hurricane of the twenty-ninth: Humphrey, streams overflowing, timber blown down; South Canisteo, phenomenal storm, considerable damage to fences and timber; Waverly, trees blown down and other damage; Setauket, gale from south; Honeymead Brook, wind eight on scale of ten, trees broken, etc.; Stillwater, high wind; Malone, rain damaged roads and bridges; Eden Centre, fences and trees blown down.

LOCATION OF STATIONS.			BAROMETER.						HUMIDITY.		TEM.		
STATIONS.	County.	Elevation, feet.	Mean.	Highest.	Date.	Lowest.	Date.	Monthly range.	Mean relative.	Dew point (degrees).	Mean of tri-daily obser- vations.	Mean of maximum and minimum.	Highest
<i>Western Plateau</i>													
Alfred Centre	Allegany	1824							75	58	65.1	66.7	96
Angelica	"	1340									64.1	64.3	93
Friendship	"	1550									63.4	64.6	93
Humphrey	Cattaraugus	1950									66.5	66.2	90
<i>Central Plateau</i>													
Arkwright	Chautauqua	1260										65.8	83
Elmira	Chemung	863									70.7	70.7	
Le Roy	Genesee	888										67.0	92
Mt. Morris	Livingston	625							78	59		66.8	85
<i>Eastern Plateau</i>													
Lockport	Niagara	616										68.9	94
Victor	Ontario	650										69.0	96
Wedgewood	Schuyler	1350									66.2	67.2	92
Addison	Steuben	1000									66.5	67.2	92
<i>Adirondack Plateau</i>													
South Canisteo	Steuben	1480									64.1	66.1	93
Arcade	Wyoming	1557									64.3	64.3	90
Varysburg	"											66.8	95
Italy Hill	Yates	1650											
<i>Adirondack Plateau</i>													
Binghamton	Broome	870									66.8	67.0	97
Oxford	Chenango	1250										66.8	93
Cortland	Cortland	1120										67.8	91
<i>Adirondack Plateau</i>													
South Kortright	Delaware	1700										64.1	90
Brookfield	Madison	1350									64.8	66.1	92
Middletown	Orange	660							73	62	71.4	71.0	94
Port Jervis	"	470										70.2	90
<i>Adirondack Plateau</i>													
Cooperstown	Otsego	1200									64.5	64.9	89
New Lisbon	"	1234									63.8	64.7	90
Quaker Street	Schenectady	973											
Perry City	Schuyler	1098									65.6	66.9	95
<i>Adirondack Plateau</i>													
Waverly	Tioga	825							70	60	68.8	68.7	97
Newfield Summit	Tompkins	2050										66.4	86
Minnewaska	Ulster	1800							67	57	67.5	68.4	87
<i>Adirondack Plateau</i>													
Lyon Mountain	Clinton	1917										64.5	94
Keene Valley	Essex	1015										63.6	84
Ampersand	Franklin	1600											
<i>Adirondack Plateau</i>													
Gloversville	Fulton	802									66.4	67.6	94
Blue Mountain Lake	Hamilton												
Bisby Lodge	Herkimer												
Constableville	Lewis	1240									63.4	63.6	88
<i>Adirondack Plateau</i>													
Lowville	Lewis	900										65.2	94
Number Four	"	1571	30.00	30.22	23	29.20	29	1.02	79	56	62.2	62.4	88
Turin	"	1240										64.5	89
<i>Adirondack Plateau</i>													
New York city	New York	164	29.97	30.22	3	29.28	24	0.94	72	62		72.0	91
Willet's Point	Queens											74.0	93
Brentwood	Suffolk	75									69.8	72.2	90
Setauket	"	40							80	65	70.3	71.4	88
<i>Adirondack Plateau</i>													
Albany	Albany	85	29.97	30.24	3	29.36	29	0.88	74	61		70.5	96
Lebanon Springs	Columbia	890										72.0	94
Honeyhead Brook	Dutchess	450										67.4	91
											68.4	68.6	88

FOR AUGUST, 1893.

TEMPERATURE—(IN DEGREES FAHR.).										SKY.		PRECIPITATION—(INCHES).						WIND.	
Date.	Lowest.	Date.	Monthly range.	Mean daily range.	Greatest daily range.	Date.	Least daily range.	Date.	Number of clear days.	No. of partly cloudy days.	Number of cloudy days.	Number of days on which 0.01 or more inches fell.	Total.	Greatest rainfall.	Duration. +	Date.	Total snow fall.	Prevailing direction.	
11 36	14	51	25	45	m	6	8	13.8	11.2	6.0	9.4	5.22	4.05	H. M.	29	.....	.....		
11 40	14	53	25	49	15	8	24	6	10	15	5	4.95	2.25	.....	29	.....	W.		
11 38	14	57	28	48	n	9	12	14	13	4	13	5.22	2.34	.....	28-29	.....	N. W.		
11 37	14	56	30	45	p	12	24	10	15	6	10	5.33	3.71	.....	29	.....	S. W.		
11 42	14	48	25	37	15	11	y	10	15	6	13	5.82	3.75	11 00	28-29	.....	S. E.		
10 49	30	34	14	21	q	8	17	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....		
11 46	14	46	21	33	r	6	z	13	11	7	9	5.54	1.40	.....	29	.....	N. W.		
11 39	14	56	29	41	p	12	6	11	14	6	8	4.89	2.80	.....	29	.....	W.		
10 46	14	48	24	36	15	13	z	16	13	2	5	5.21	3.82	.....	28	.....	S. W.		
11 45	14	51	26	39	15	6	24	13	15	3	10	5.61	1.80	9 29	29	.....	N. W.		
11 40	14	52	27	41	16	8	24	19	9	3	9	3.69	1.59	.....	19	.....	S. W.		
11 40	15	53	29	45	16	11	24	18	7	6	11	4.13	2.25	10 00	28-29	.....	N. W.		
11 39	14	51	26	36	r	13	29	14	13	4	11	6.55	3.55	21 00	28-29	.....	.....		
11 40	14	55	27	40	9	11	17	12	13	6	9	5.77	4.05	.....	29	.....	.....		
10 40	13	53	26	44	16	7	24	16	6	9	10.2	6.08	3.04	18 50	23-24	.....	.....		
10 40	13	53	26	44	16	7	24	16	6	9	12	4.88	2.13	5 00	24	.....	W.		
11 45	14	51	26	40	16	8	24	.....	.....	.....	10	7.37	2.20	.....	24	.....	.....		
11 45	14	40	17	28	16	6	24	.....	.....	.....	8	4.37	1.53	.....	29	.....	.....		
11 33	14	57	28	44	16	11	24	.....	.....	.....	8	7.26	2.11	.....	24	.....	W.		
11 38	14	54	22	38	3	7	24	15	5	11	11	6.65	2.38	.....	24	.....	N. W.		
11 47	14	47	22	35	28	12	20	17	8	6	11	5.68	3.04	18 50	23-24	.....	W.		
11 45	14	45	20	33	s	8	24	14	13	4	7	5.63	2.40	.....	24	.....	N. W.		
10 38	14	51	23	38	3	3	24	10	10	11	15	7.59	1.88	.....	24	.....	N. W.		
10 35	14	55	26	41	9	13	17	15	7	9	13	8.23	1.97	15 30	24	.....	N.		
11 40	14	55	26	40	t	9	24	12	14	5	9	5.21	2.34	17 30	28-29	.....	N. W.		
10 38	14	59	29	46	15	9	24	13	14	4	10	5.29	1.71	19 00	29	.....	N.		
10 38	14	41	17	27	1	9	22	.....	.....	.....	8	4.66	2.40	23 30	24	.....	.....		
10 50	14	37	17	24	25	4	17	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....		
10 36	14	48	21	43	9	2	17	12.3	8.2	10.5	9.4	6.83	4.38	.....	29	.....	.....		
10 45	14	39	13	22	10	2	17	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....		
10 42	14	52	26	40	8	6	24	14	5	12	14	5.80	1.53	.....	29	.....	S. W.		
10 40	14	48	21	34	9	9	17	.....	.....	.....	5	6.00	2.84	12 00	29	.....	.....		
10 43	14	51	25	43	9	9	24	14	8	9	11	8.65	4.38	.....	29	.....	N. W.		
11 36	14	52	22	35	u	4	17	6	13	12	7	6.63	2.12	13 30	24	.....	W.		
11 45	14	40	20	34	3	7	17	5	7	9	10	7.09	2.45	17 25	29	.....	N.		
25 45	29	38	18	35	29	6	aa	12.0	11.0	8.0	8.8	7.02	3.81	.....	24	.....	.....		
25 58	14	35	16	24	25	6	20	11	13	7	11	7.18	3.81	.....	24	.....	S.		
25 45	29	45	18	35	29	6	23	.....	.....	.....	9	7.05	3.45	.....	23	.....	N. E.		
25 46	31	42	23	34	11	8	20	.....	.....	.....	7	7.19	2.00	.....	19-24	.....	S. W.		
25 56	31	32	16	28	15	9	ab	13	9	9	8	6.65	2.58	.....	19-20	.....	W.		
10 37	14	47	23	40	9	3	24	11.3	13.5	6.2	9.0	6.27	4.00	.....	24	.....	.....		
10 50	14	44	20	31	15	6	17	11	14	6	9	7.21	2.62	.....	24	.....	S.		
10 37	14	54	26	39	10	3	24	7	13	11	7	5.93	3.00	.....	24	.....	W.		
10 43	14	45	21	35	15	6	17	11	11	9	9	5.31	2.89	19 00	24	.....	S. W.		

## METEOROLOGICAL DATA

LOCATION OF STATIONS.			BAROMETER.					HUMIDITY.		TEMP.			
STATIONS.	County.	Elevation, feet.	Mean.	Highest.	Date.	Lowest.	Date.	Monthly range.	Mean relative.	Dew point (degrees).	Mean of tri-daily observations.	Mean of maximum and minimum.	Highest.
<i>Hudson Valley (con.)</i>													
Poughkeepsie	Dutchess	180										70.8	96
Wappinger's Falls	Orange	167										71.3	92
West Point	Putnam	546										74.8	94
Boyd's Corners	Putnam	500											
Carmel	Putnam	500											
Stillwater	Saratoga									68.4		69.3	98
Rondout	Ulster	150											
<i>Mohawk Valley</i>													
Rome	Oneida	445										68.4	96
Utica	"	537							90	60		68.5	93
												68.8	96
<i>Champlain Valley</i>													
Plattsburgh Barracks.	Clinton	125										65.4	87
Port Henry	Essex											65.4	87
Glens Falls	Warren	340											
Whitehall													
<i>St. Lawrence Valley</i>													
Malone	Franklin	810									65.0	67.3	97
Madison Barracks	Jefferson	266										65.1	90
Watertown	"	486										69.0	97
												68.0	91
Canton	St. Lawrence	304											
North Hammond	"	300											
Ogdensburg	"	258									68.0	67.8	92
Potsdam	"	306										66.7	99
<i>Great Lakes</i>													
Dunkirk	Chautauqua	590										68.5	99
Buffalo	Erie	690	30.00	30.24	31	29.50	29	0.74	72	59		66.9	93
Eden Centre	"	690										69.0	90
												68.2	99
Brockport	Monroe	520											
Rochester		621	30.01	30.25	14	29.31	29	0.94	72	58		69.0	97
Fort Niagara	Niagara	263										71.6	97
Hess Road Station	Niagara	330											
Baldwinsville	Onondaga	890							73	50		67.2	92
Albion	Orleans	521									67.7	69.1	96
Oswego	Oswego	304	29.97	30.21	14	29.17	29	1.04	73	58		68.0	92
Palermo		460							73	59	67.2	67.5	96
Lyons	Wayne	407									68.8	68.7	92
Erie, Pa	Erie	681	29.99	30.25	31	29.67	29	0.58	65	56		68.0	96
<i>Central Lakes</i>													
Fleming	Cayuga	1000										69.2	94
Geneva	Ontario	459										67.8	94
												68.7	94
Watkins	Schuyler	737									71.7	72.1	92
Romulus	Seneca	719							81	61		70.5	96
Hammondsport	Steuben	800											
Ithaca	Tompkins	793	29.96	30.28	14	29.15	29	1.13			67.9	67.6	92
Mean			29.98	30.28	14	29.15	29	0.91	74	59		68.0	96

\* Mean of the tri-daily observations. † Mean of the maximum and minimum by the  
from the tri-daily observations are derived by the formula (7 a. m. + 2 p. m. + 9 p. m. + 9 p. m.) ÷ 4  
four hours. ‡ Mean for twenty-one days.  
(a) 10, 11; (b) 11, 12; (c) 12, 16; (d) 9, 25; (e) 14, 31; (f) 14, 30; (g) 14, 15; (h) 4, 14; (i) 29, 30, 31;  
(j) 3, 16; (k) 9, 14, 15; (l) 4, 10; (m) 23, 30; (n) 6, 24, 29; (o) 12, 29; (p) 6, 29; (aa) 30, 31;

## STATE METEOROLOGICAL BUREAU.

181

FOR AUGUST, 1893 — (Concluded).

TEMPERATURE — (IN DEGREES FAHR.).						SKY.			PRECIPITATION — (INCHES).						WIND.			
Date.	Lowest.	Date.	Monthly range.	Mean daily range.	Greatest daily range.	Date.	Least daily range.	Date.	Number of clear days.	No of partly cloudy days.	Number of cloudy days.	Number of days on which 0.01 or more inches fell.	Total.	Greatest rainfall.	Duration.†	Date.	Total snowfall.	Prevailing direction.
10 41	14	55	29	40	9	18	29	17	9	5	5	5	4.11	4.00	H. M.	24		E.
11 48	14	44	22	33	15	8	17	19	9	8	11	6	6.64	3.09	10 15	24		S. W.
9 48	23	46	21	37	15	10	29	...	...	...	7	6.62	3.17	...	23 24	...	...	
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
6 45	14	44	20	32	14	8	29	3	25	3	14	8.08	2.40	15 00	24	...	N. E.	
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10 40	14	52	23	40	9	8	18	1	23	7	12.5	6.69	1.82	...	25	...	...	
11 44	14	49	30	29	11	6	18	1	...	...	...	6.68	1.82	...	25	...	...	
10 40	14	56	24	40	9	10	24	1	23	7	13	6.57	1.81	...	24	...	W.	
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11 45	14	39	17	28	h	5	29	...	...	...	8	5.76	2.04	...	24	...	...	
11 48	14	39	17	28	h	5	29	...	...	...	8	5.76	2.04	...	24	...	S. W.	
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11 40	30	49	20	38	10	3	29	9.7	12.0	9.8	11.4	8.42	4.28	...	29	...	...	
11 40	30	60	18	32	4	5	18	13	5	18	16	9.98	2.88	14 00	24	...	S. W.	
11 46	14	51	21	34	4	3	29	...	...	...	10	9.00	5.25	...	28 29	...	S. W.	
11 45	f	46	22	33	4	10	24	4	18	9	10	9.20	4.28	...	29	...	S.	
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11 49	...	43	19	27	10	5	17	12	18	6	13	6.76	...	...	...	...	...	
11 44	29	46	22	35	10	8	24	...	...	...	8	5.69	2.75	24 00	29	...	N. W.	
...	...	...	...	...	...	...	...	...	...	...	...	9.92	3.10	...	29	...	...	
8 37	30	45	19	47	24	3	12	16.0	8.6	6.4	8.2	5.46	4.56	18 30	28 29	...	...	
10 50	30	38	14	23	23	4	17	15	7	9	6	5.80	4.21	...	...	...	...	
9 49	14	41	18	29	15	6	29	11	18	2	5	4.91	3.88	...	29	...	N. W.	
8 37	30	62	26	47	24	10	17	22	1	8	6	5.96	4.66	18 30	28 29	...	S. W.	
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11 46	14	49	20	32	23	6	6	14	8	9	9	5.61	4.14	...	29	...	S. W.	
11 56	j	41	18	32	23	8	29	...	...	...	6	4.85	3.30	19 00	28 29	...	W.	
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11 47	f	45	20	31	23	10	6	16	11	4	7	4.48	3.46	20 45	28 29	...	N. E.	
10 49	31	44	20	30	10	6	24	19	5	7	11	5.15	1.54	...	27	...	N. W.	
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11 52	14	40	15	26	23	3	12	16	6	9	10	6.47	3.76	...	29	...	S.	
10 40	14	58	26	44	15	11	17	20	6	5	10	5.51	2.08	22 30	28 29	...	N. W.	
11 51	31	41	19	30	16	8	24	19	6	6	10	7.89	3.50	...	28	...	W.	
10 50	30	38	15	24	30	5	29	8	18	5	8	3.61	1.95	...	29	...	N. E.	
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11 43	14	46	21	37	9	3	24	11.0	13.2	6.8	7.4	3.97	1.98	...	29	...	...	
11 48	7	46	21	34	6	6	29	5	21	5	4	2.01	0.82	16 00	27	...	W.	
11 47	14	47	23	37	9	7	24	...	...	...	8	4.53	1.89	22 00	28 29	...	...	
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10 50	k	42	17	36	2	18	22	10	10	11	7	3.85	1.25	...	27	...	S.	
11 47	14	49	24	34	15	11	24	17	10	4	9	4.15	1.98	...	29	...	N.	
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11 43	14	42	20	36	3	3	24	12	12.1	7	9	3.86	1.30	12 30	24	...	N. W.	
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
8 33	14	46	21	47	24	2	17	11.2	12.3	7.5	9.4	6.16	4.56	18 30	28 29	...	W.	

Draper thermograph. † Report received too late to be used in computing means. The means + Blank indicates that the duration is not shown in the original records, but is within twenty.

(j) 14, 23, 31; (k) 2, 5; (m) 9, 15, 16; (n) 3, 9, 15, 16; (p) 9, 15; (q) 3, 14; (r) 9, 16; (s) 14, 16; (ab) 14, 15, 23.

## DAILY AND MONTHLY MEAN TEM

STATION.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<i>Western Plateau</i> .....	63	64	68	72	72	63	62	65	72	75	77	67	59	58
Alfred Centre .....	70	63	65	72	72	61	59	67	73	76	79	66	59	57
Angelica .....	67	62	64	70	68	62	61	62	70	72	73	62	56	55
Friendship .....	66	62	64	68	69	62	62	64	70	70	73	65	58	57
Humphrey .....	68	66	67	72	71	61	60	66	70	72	76	64	62	59
Arkwright .....	64	66	68	70	72	61	62	64	71	76	74	64	58	62
Elmira* .....	70	70	76	74	75	64	66	72	76	78	79	71	61	63
LeRoy .....	67	64	67	73	73	63	64	66	72	76	78	70	58	60
Mount Morris .....	67	64	66	73	73	61	64	66	72	76	76	66	60	58
Lockport .....	68	67	70	78	74	64	66	68	72	79	80	69	62	63
Victor .....	72	66	70	74	74	66	61	68	75	78	86	71	60	61
Wedgewood .....	70	61	67	70	69	68	64	66	71	73	74	76	61	56
Addison .....	67	62	66	70	69	64	62	63	70	72	74	68	58	54
South Canisteo .....	64	61	66	72	70	62	60	62	70	74	76	63	54	56
Arcade .....	68	64	72	69	72	61	62	62	72	76	78	68	62	58
Varysburgh .....	67	62	66	70	69	64	62	63	70	72	74	68	58	54
Italy Hill .....	69	66	66	68	70	68	64	68	70	74	73	70	62	59
<i>Eastern Plateau</i> .....	69	65	66	69	71	64	60	66	70	74	76	70	62	58
Binghamton .....	71	65	66	70	72	70	65	67	69	73	74	70	62	58
Oxford .....	66	62	65	71	72	66	62	66	68	72	74	71	58	56
Cortlandt .....	70	62	63	68	63	65	70	67	68	68	60	66	59	54
South Kortright .....	68	64	64	68	70	66	62	66	69	75	75	68	59	56
Brookfield .....	74	75	72	68	73	73	66	73	75	77	80	77	70	63
Middletown .....	74	69	67	67	75	73	66	72	74	75	76	74	70	62
Port Jervis .....	67	60	61	69	69	66	62	66	67	72	73	70	59	56
Cooperstown .....	68	62	63	65	70	66	62	66	68	72	72	66	58	54
New Lisbon .....	66	64	65	71	72	64	60	65	72	75	78	71	60	57
Quaker Street .....	67	66	67	70	76	71	62	69	72	76	76	72	64	59
Perry City .....	68	72	70	64	56	64	74	76	75	70	56	63	62	71
Waverly .....	70	67	70	70	72	70	62	68	76	78	78	74	62	60
Newfield Summit .....	66	60	63	68	71	65	60	66	68	73	74	66	57	57
Minnewaska .....	61	56	64	70	72	63	58	64	70	72	76	64	52	55
<i>Northern Plateau</i> .....	66	60	65	67	76	64	58	69	68	74	74	66	60	62
Lyon Mountain .....	71	64	64	68	72	68	67	73	72	75	74	68	66	62
Amperсанд .....	66	60	61	67	68	62	59	60	66	72	76	66	56	56
Gloversville .....	68	60	63	69	71	68	59	67	68	73	72	70	56	58
Constableville .....	64	56	64	66	68	64	58	63	66	72	73	60	54	54
Lowville .....	66	61	62	69	69	66	58	66	68	74	75	68	55	58
Number Four .....	73	72	71	68	76	74	70	74	76	75	74	77	69	67
Turin .....	75	75	74	70	74	76	70	74	80	79	77	80	72	68
<i>Coast Region</i> .....	72	70	70	68	81	72	70	75	74	76	76	79	63	70
New York city .....	74	70	69	66	75	73	68	73	74	72	66	74	67	64
Willet's Point .....	72	72	70	66	74	74	70	74	74	74	73	76	70	66
Brentwood .....	75	70	69	70	75	73	67	71	75	77	77	76	66	60
Setauket .....	77	71	71	74	78	73	64	74	77	80	80	76	66	64
<i>Hudson Valley</i> .....	68	68	62	69	72	72	64	68	70	72	72	73	58	54
Albany .....	72	67	66	66	74	72	64	70	72	74	73	74	64	58
Lebanon Springs .....	69	71	69	68	73	72	68	70	75	77	79	76	72	58
Honeymead Brook .....	77	68	70	74	74	70	72	76	76	76	78	78	68	62
Poughkeepsie .....	78	79	78	69	81	77	73	76	85	84	78	84	72	66
Wappinger's Falls .....	74	68	66	72	74	70	64	70	73	74	76	74	64	61
West Point .....	71	65	66	74	70	70	64	67	70	77	78	76	64	58
Boyd's Corners .....	73	66	63	73	72	74	64	66	67	77	78	79	65	56
Stillwater .....	69	64	68	74	68	66	64	68	73	77	78	72	62	60
Rondout .....	71	65	66	74	70	70	64	67	70	77	78	76	64	58
Peekskill .....	73	66	63	73	72	74	64	66	67	77	78	79	65	56
<i>Mohawk Valley</i> .....	69	64	68	74	68	66	64	68	73	77	78	72	62	60
Rome .....	71	65	66	74	70	70	64	67	70	77	78	76	64	58
Utica .....	69	64	68	74	68	66	64	68	73	77	78	72	62	60

# STATE METEOROLOGICAL BUREAU.

183

TEMPERATURES FOR AUGUST, 1893.

	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Monthly mean.
64 61 60 59	68 70 64 67	68 67 66 66	68 67 66 66	64 62 66 66	64 62 63 64	62 59 60 60	62 59 60 63	69 62 66 71	67 66 64 66	74 76 74 74	71 70 68 71	74 73 71 73	72 71 72 71	62 61 62 60	57 56 54 57	59 56 55 57	66.7 66.4 64.3 61.6 66.2	
65 64 63	70 68 68	64 72 68	65 72 70	62 68 66	62 63 62	62 66 63	61 69 61	71 68 69	72 68 67	72 75 74 76	63 76 71 70	72 74 74 74	70 76 71 72	58 68 57 56	56 64 67 56	58 61 64 58	65.8 70.7 67.0 66.8	
67	70	70	70	66	65	66	66	72	70	74	72	75	74	62	60	58	68.9	
68 63	74 66	70 67	68 65	68 65	68 69	67 63	64 62	68 66	64 66	76 74	73 72	70 75	72 72	64 66	58 60	64 60	69.0 67.2	
62 67	66 72	69 64 66	66 66 68	62 62 63	66 60 59	60 58 59	60 58 61	66 58 71	64 66 68	74 73 74	70 68 71	74 74 72	72 72 72	64 60 61	56 53 59	58 52 62	66.1 64.3 66.8	
64 61 61 61	67 67 66 66	67 68 68 66	66 66 65 62	65 62 64 64	68 63 67 70	66 65 68 62	64 62 62 62	65 68 64 60	65 64 66 64	73 74 72 72	72 72 73 70	72 74 74 72	72 74 74 72	67 68 66 67	60 58 58 49	59 58 60 58	67.0 66.8 67.3 65.9 64.1	
66 70 69 61 61	69 75 70 64 64	68 67 65 65 64	68 69 68 65 64	66 66 66 61 62	65 67 67 65	67 69 68 65	64 67 71 61	63 65 63 62	63 63 62 58	64 75 68 72	70 76 78 70 72	69 76 78 70 71	72 75 76 72 72	64 70 71 68 67	60 65 71 56 58	58 62 66 56 56	66.1 71.0 70.2 64.9 64.7	
68 65 79	66 64 64	70 73 64	69 68 64	64 65 66	68 64 64	64 69 68	62 63 62	66 66 66	66 67 65	78 74 73 65	63 74 70 74	73 75 72 73	75 73 62 73	64 69 54 73	56 62 59 72	60 61	66.9 68.7 66.4 68.4	
63 ...	64 60	63 57	64 60	64 60	62 60	62 62	64 65	66 62	64 62	66 67	68 66	67 66	71 66	62 60	56 58	58 56	64.5 63.6	
65	68	64	66	66	66	66	65	66	66	73	72	71	73	64	60	61	67.6	
65 68 63	64 63 66	64 63 64	64 62 64	63 66 64	60 62 61	60 60 62	60 64 62	64 64 66	68 64 66	71 68 70	68 66 68	66 66 66	66 70 66	72 60 62	62 59 62	57 53 58	61 54 58	63.6 65.2 62.4 64.5
71 74 72 67 70	74 78 68 68 70	71 76 72 68	74 75 72 69	71 72 72 70	67 67 68 68	69 70 68 68	71 73 68 68	69 70 68 68	72 81 72 72	78 70 80 74	78 80 78 76	77 79 77 76	76 78 72 76	71 76 62 75	68 70 62 68	65 64 66 62	65 64 62 70.4	
68 79 62 66	69 64 70	69 65 66	70 73 67	68 68 67	67 69 66	67 63 66	68 66 64	66 70 65	70 70 72	75 79 74	75 78 71	74 76 76	75 73 76	75 72 70	65 64 63	62 58 60	70.5 72.0 67.4 68.6	
71 68 70	68 70 82	65 70 78	68 68 78	65 68 71	62 64 64	66 69 67	71 67 66	65 67 66	73 67 64	77 72 69	74 76 75	77 78 75	76 77 74	76 71 76	68 66 70	61 62 68	70.3 71.3 74.3	
65	68	68	68	68	69	68	68	67	66	73	74	72	74	74	64	62	69.3	
64 63 66	68 67 67	70 73 68	66 66 66	67 66 68	68 68 68	66 66 68	66 66 66	67 66 66	71 68 67	70 75 87	75 66 73	74 71 73	73 71 72	72 74 24	70 74 67	61 62 59	60 60 60	68.4 68.5 68.3



## DAILY AND MONTHLY MEAN TEM

STATION.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<i>Champlain Valley.</i>	70	66	66	68	78	70	67	70	72	78	76	72	60	62
Plattsburgh B'k's..	70	66	66	68	78	70	67	70	72	78	76	72	60	62
Glens Falls.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
<i>St. Lawrence Val..</i>	66	62	68	71	74	66	63	67	72	75	79	68	61	62
Malone.....	66	60	66	69	74	66	61	66	71	74	77	68	58	58
Madison Barracks..	68	64	69	72	76	70	65	65	78	78	83	72	62	58
Watertown.....	68	62	67	72	74	66	64	67	70	76	78	72	60	60
<i>Canton</i> .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
North Hammond...	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ogdensburgh.....	62	64	68	71	72	63	63	71	75	79	81	62	60	67
Potsdam.....	64	60	70	70	74	64	60	66	70	70	78	66	66	66
<i>Great Lakes</i> .....	68	65	68	72	74	63	67	68	72	77	79	69	64	64
Dunkirk.....	66	65	66	70	73	64	66	64	70	76	76	67	62	62
Buffalo.....	63	66	70	75	73	60	65	68	76	76	78	68	62	62
Eden Centre.....	67	60	70	70	72	58	78	78	78	63	68	67	62	80
Brockport.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Rochester.....	68	66	69	76	77	59	65	67	74	80	82	70	62	61
Fort Niagara.....	74	70	73	75	79	65	71	70	72	81	86	74	68	67
Hess Road Station.	70	66	66	68	74	64	66	65	70	76	79	71	62	60
Baldwinsville.....	67	66	72	72	76	64	66	68	72	78	81	64	60	64
Albion.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
<i>Oswego</i> .....	66	65	65	74	74	64	64	70	70	76	80	68	62	61
Palermo.....	68	64	64	70	73	66	64	70	69	79	80	71	63	58
Lyons.....	69	66	68	73	74	66	64	68	72	78	80	70	60	64
Erle, Pennsylvania..	69	66	66	72	74	66	66	65	72	79	76	66	63	62
<i>Central Lakes</i> .....	71	68	69	74	71	67	65	68	73	79	80	73	62	63
Fleming.....	74	70	69	77	67	67	64	63	77	80	82	75	58	61
Geneva.....	68	68	68	72	73	66	64	69	72	77	80	70	61	62
<i>Watkins</i> .....	72	68	70	73	66	72	78	72	72	80	78	76	72	68
Romulus.....	60	68	70	75	74	68	62	68	74	78	81	73	62	64
Ithaca.....	69	66	69	73	74	64	59	66	72	78	78	70	57	58
Monthly means.	69.7	65.8	68.4	70.5	72.6	67.9	64.9	68.4	72.0	75.5	76.7	71.4	62.4	61.0

\* Mean of tri-daily observations. † Mean of the maximum and minimum by the Draper and minimum of the ordinary self-registering thermometers. The means from the tri-daily received too late to be used in computing averages.

## PERATUSES FOR AUGUST, 1893 — (Concluded).

15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Monthly mean.
65 66	65 65	62 62	64 64	64 64	62 62	64 64	65 66	66 66	68 68	76 76	72 72	67 67	72 72	72 72	62 62	60 60	65.4 65.4
66 64 64 66	68 62 68 70	63 60 65 62	66 60 68 69	66 59 68 67	66 62 68 66	66 62 68 65	67 66 68 66	70 68 72 68	68 66 67 68	70 72 74 73	70 68 74 71	70 68 74 74	72 74 74 76	63 60 66 72	59 54 62 56	61 58 66 60	67.3 65.1 69.0 68.0
66 67	70 70	62 66	65 66	67 69	69 68	65 69	68 65	72 68	68 71	71 64	69 66	71 64	74 63	62 54	68 .....	59 .....	67.8 66.7
66 66 66 61	69 66 70 64	68 67 70 70	67 65 68 62	65 66 68 58	68 64 66 57	65 64 66 58	64 65 66 62	71 70 71 68	71 70 72 72	75 72 74 76	71 72 74 71	73 72 74 76	75 70 74 78	62 62 60 58	60 58 60 58	61 60 62 58	68.5 66.9 69.0 68.2
68 73 62 70	71 71 69 74	68 70 64 71	69 71 67 68	66 68 62 68	64 63 62 68	66 70 67 66	62 68 62 66	74 72 70 72	70 74 70 67	77 78 75 77	70 71 68 72	76 74 70 74	76 78 75 77	60 64 64 60	60 62 58 62	61 65 60 61	69.0 71.6 67.2 69.1
65 61 66 66	67 67 68 74	66 67 69 66	66 68 64 68	66 66 67 66	65 66 66 66	64 62 65 66	64 66 65 64	71 69 70 73	67 70 70 75	74 72 79 74	70 70 71 70	72 70 71 72	74 73 74 72	63 64 64 62	62 58 63 59	61 61 61 60	68.0 67.5 68.7 68.0
68 65 66	70 71 68	61 63 70	69 68 70	68 66 66	69 68 67	66 64 67	65 63 66	70 74 68	68 70 68	77 76 76	74 70 73	75 77 73	74 77 76	68 71 64	62 58 60	64 60 62	69.7 69.6 68.7
74 70 64	70 72 68	74 75 69	71 68 67	67 75 64	71 69 68	64 67 66	69 66 62	64 76 69	67 70 64	78 78 77	78 74 71	78 75 74	70 74 74	78 64 65	72 60 60	73 65 60	72.1 70.5 67.6
66.2	66.8	66.8	67.4	66.2	65.8	65.3	65.6	67.7	68.6	73.8	72.8	72.1	73.1	67.0	61.0	60.9	68.0

thermograph. Means for all stations not otherwise indicated are derived from the maximum observations are derived by the formula (7 a. m. + 2 p. m. + 9 p. m. + 9 p. m.) ÷ 4. || Reports

## DAILY AND MONTHLY PRECIP

STATIONS.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<i>Western Plateau</i>	0.07	0.00	T.	T.	T.	0.23	0.02	0.00	0.00	T.	0.62	0.22	0.02	0.00
Alfred Centre												.34		
Angelica	.03					.06	.08				.08	.62		
Bolivar	.07					.30	.01					.06		
Friendship	.04					.02	T.				.05	.28		
Humphrey						.05					.09	.29		
Little Valley	.08			.04	.08	T.					.68	.08		
Cherry Creek			T.			.12	.01				.11	.10		
Elmira						.02						.27		
Akron												.23		
LeRoy						.15						.32	.32	
Avon														
Mt. Morris	.12					.63						.30		
Lockport						T.	.05					.10		
Victor														
Wedgewood						.47						.09		
Addison						.09						T.		
Atlanta	.40					.82	.08			T.		.32		
Pine City						T.						.17		
South Canisteo			T.			.15	.05					.18		
Arcade	.06					.52	.07				.09	.13		
Attica														
Castile	.77					1.02	.03					.34		
Varysburg						.16	.07				.20	.47		
<i>Eastern Plateau</i>	0.08	0.00	0.00	T.	0.02	0.16	0.06	0.00	0.00	0.00	0.00	0.12	0.00	0.00
Winghamton	.05					T.	T.					.15		
Chenango Forks														
Oxford						.15						.29		
Cortland							.27					.07		
Bovina Centre	.50					.31	.30					.50		
Deposit														
South Kortright						.41								
Brookfield	.52					T.	.02					.01		
Apulia														
Middletown	.05			.08								.03		
Port Jervis						.11								
Warwick	.20				.35									
Cooperstown	.06					.22	.11					.12		
New Lisbon	.02					.10	.05					.21		
Quaker Street														
Perry City						.38	.02					T.		
Liberty														
Newark Valley						.05	.05					.05		
Waverly						.25	T.					.51		
Ellist						.67	.25							
Minnewaska					.02							.02		
<i>Northern Plateau</i>	0.15	0.00	0.00	0.00	0.00	0.39	0.09	0.00	0.00	0.00	0.00	0.38	0.00	0.00
West Chazy	.36					.30	.16					.31		
Au Sable Forks														
Keene Valley														
Amersand †						.86						.63		
Gloversville	.06					.08	.05					.04		
Blue Mt. Lake														
Constableville	.11					.75								
Lowville	.05					.11						.57		
Number Four						.22						.56		
Turin	.11					.83	T.					.35		
Boonville	.28					.25	.01					.10		
Galway														
King's Station	.36					.15	.57					.04		

TATION FOR AUGUST, 1893 — INCHES.

15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total.
0.00	0.04	0.29	T.	0.20	0.01	0.01	0.00	T.	0.56	0.08	0.08	0.84	0.42	2.56	T.	T.	5.30
.....	T.	.55	T.	.05	.....	.02	.....	.....	.52	.62	1.36	.75	.25	2.25	.....	.....	4.95
.....	.....	.50	.....	.....	.03	.....	.....	.....	1.03	.06	.....	.03	.18	2.21	.....	.....	5.22
.....	.....	.41	T.	T.	.07	.04	.....	.....	.60	.11	.....	*	*	13.71	.....	.....	4.12
.....	.77	.....	T.	.10	.....	.....	.....	.....	.09	.27	.....	.25	.07	3.75	.....	.09	5.82
.....	.02	.32	T.	.03	.06	.....	.....	.....	.....	.....	.....	.43	.12	3.00	.....	.....	4.48
.....	.....	.66	T.	.55	.....	.....	.....	.....	1.18	.83	.....	.13	1.00	4.50	.02	.....	5.75
.....	.....	.40	.....	.....	.....	.....	.....	.....	.....	.....	.....	T.	.97	1.40	.....	.....	5.54
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3.11	.....	.....	4.70
.....	.....	.....	.....	.....	.....	.....	.....	.....	.40	.....	.....	.70	.20	2.80	.....	.....	4.89
.....	.....	.....	.....	.....	.....	.....	.....	.....	.82	.....	.....	.25	.05	2.95	.....	.....	5.20
.....	.....	.18	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.69	3.82	.....	.....	5.21
.....	.....	.55	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.25	.....	1.80	.....	.06	.....	.....	1.07	.13	.....	.31	.05	1.38	.....	.....	5.61
.....	.....	.25	T.	.50	.....	.....	.....	.....	.91	.08	.....	.20	.12	1.59	.....	.....	3.69
.....	.....	.44	.....	.50	.....	.10	.....	.....	1.13	.....	.01	.61	.03	3.08	.....	T.	7.47
.....	.....	.05	.....	.37	.03	.03	.....	T.	1.05	T.	.88	.18	1.68	.....	.....	.....	4.20
.....	.....	.25	.06	.....	.....	T.	.....	.....	.84	.15	.....	.10	2.25	.15	.....	.....	4.13
.....	.05	.32	T.	.....	.....	T.	.....	.....	.88	.....	.....	1.20	.19	3.55	.....	.....	6.55
.....	.....	.33	.....	.....	.11	.....	.....	.....	.92	.....	.....	.63	.02	3.07	.....	.....	7.34
.....	.....	.35	.....	.....	.....	.....	.....	.....	.17	.....	.....	.16	.14	4.06	.....	.....	5.77
0.00	0.00	0.48	0.05	0.15	0.46	0.08	0.04	0.01	1.99	0.25	0.07	0.42	0.32	1.34	T.	0.00	6.36
.....	.....	.48	.01	.05	.09	.18	.....	.....	2.13	.....	.37	.02	.43	.92	T.	.....	4.88
.....	.....	.....	.75	.....	.73	.02	.....	.04	2.20	.....	.....	1.15	.50	1.54	.....	.....	7.37
.....	.....	.37	.....	.....	.....	.....	.....	.....	1.03	.19	.15	.49	.....	1.53	.....	.....	4.37
.....	.....	.....	.51	T.	.....	.72	.17	.70	3.35	.....	.35	.....	1.35	1.80	.....	.....	10.56
.....	.....	.....	.....	.....	.36	1.23	.51	.....	2.11	.28	.....	1.34	.....	1.02	.....	.....	7.25
.....	.....	.15	.....	.....	.62	.01	.....	.02	2.38	.75	.....	.55	.....	1.62	.....	.....	6.65
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.78	.01	.....	.91	.08	.....	*	13.04	.01	.....	.....	.....	.74	.....	.....	5.68
.....	.....	.35	.....	.12	.70	.....	.....	.....	2.40	.....	.04	.....	.....	1.91	.....	.....	5.63
.....	.....	.30	.....	.85	.95	.12	.....	T.	4.31	.....	.....	.....	.....	.67	.....	.....	7.75
.....	.....	1.09	.02	.02	.62	.14	.....	.01	1.88	.79	.....	1.43	.44	.64	.....	.....	7.59
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.36	.....	.02	.90	.....	.....	.....	1.97	.51	.25	1.26	1.48	1.25	.....	.....	8.38
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.40	.....	.04	.....	.02	.....	.....	1.13	.68	.....	.20	.....	2.34	.....	.....	5.21
.....	1.15	.....	.57	.....	.....	.....	.....	.15	1.00	.27	.....	.....	.....	1.25	.....	.....	4.39
.....	.....	1.00	.....	.22	.26	.....	.....	.....	1.16	.13	.....	T.	.95	1.30	.....	.....	5.17
.....	.....	.33	.06	.10	.....	.....	.....	.....	1.44	.20	.....	.63	.03	1.71	.....	.....	5.29
.....	.....	.50	.....	.13	.02	.....	.....	.....	1.40	.21	.....	.02	.18	.....	.05	.....	.....
.....	.....	.40	.....	.....	.12	.20	.....	*	12.40	.....	.10	.....	.....	1.40	.....	.....	4.66
0.00	0.00	0.35	0.11	0.18	0.29	0.07	0.00	T.	2.00	0.10	0.01	1.04	0.10	2.42	0.00	0.00	7.60
.....	.....	.51	.12	.14	.04	.13	.....	.....	2.77	.10	T.	T.	.06	2.23	.....	.....	7.73
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.27	.....	.06	.60	.08	.....	.02	1.48	.46	.....	.94	.18	1.53	.....	.....	5.80
.....	.....	.....	.....	.....	.....	.....	.....	.....	2.18	.....	.....	.....	.....	2.84	.....	.....	6.00
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.16	.10	.17	.06	.....	.....	.....	1.83	.....	.....	1.07	.15	4.38	.....	.....	8.65
.....	.....	*	*	1.45	.33	.....	.....	.....	2.12	.....	.....	.20	*	12.85	.....	.....	6.63
.....	.....	.30	.....	.08	.06	.04	.....	.....	1.26	.....	.....	1.54	0.07	2.45	.....	.....	7.09
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.38	.15	.....	.02	.08	.....	.....	2.13	.....	.....	1.65	.26	2.35	.....	.....	7.66
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.71	.49	.82	1.55	.....	.....	.....	2.25	.25	.08	2.90	.....	1.15	.....	.....	11.25

## DAILY AND MONTHLY PRECIP

STATIONS.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<i>Coast Region</i> .....	0.40	0.00	0.00	0.05	0.32	0.00	0.03	0.00	0.00	0.00	0.00	0.05	0.07	0.00
New York City .....	.06			.06	.24							.15	T.	
Willet's Point .....					.25		.13					.10		
Brentwood .....	1.17			.30										
Setauket .....	.50			T.	.68							T.		
Bedford .....	.31				.41								.35	
<i>Hudson Valley</i> .....	0.22	0.00	0.00	0.00	0.06	0.12	0.72	0.00	0.00	0.00	0.01	0.07	0.01	0.00
Albany .....	T.					.60	1.51					T.	.01	
Bethlehem Centre .....														
Lebanon Springs .....							.25					T.		
Honeymead Brook .....	.73				.08		.02					.06		
<i>Pawling</i> .....														
Poughkeepsie .....	.03											.02		
Wappinger's Falls .....	.51				.24		T.					.49	.02	
West Point .....					.20						.10			
Boyd's Corners .....														
<i>Carmel</i> .....														
S. East Reservoir .....														
Schoodack Depot .....														
Stillwater .....	.30					.39	2.06						.04	
Rondout .....														
Easton .....	.31						2.13							
<i>Mohawk Valley</i> ....	0.02	0.00	0.00	0.00	0.00	0.30	0.04	0.00	0.00	0.00	0.00	0.05	0.00	0.00
Rome .....						.25								
Utica .....	.02					.35	.08					.10		
<i>Champlain Valley</i> .....	0.18	0.00	0.00	0.00	0.00	0.34	0.60	0.00	0.00	0.00	0.00	0.35	0.00	0.00
Plattsburgh Barracks .....	.18					.34	.60					.25		
Port Henry .....														
Glens Falls .....														
Whitehall .....														
<i>St. Lawrence Val'y</i> .....	0.01	0.00	0.00	0.00	0.03	0.70	0.36	0.00	0.00	0.00	T.	0.23	T.	0.00
Malone .....	.04					1.53	.36					.23		
Madison Barracks .....					.11	1.20					.04	.24		
Watertown .....	T.					.23	.73					.44		
Canton .....														
<i>DeKalb Junction</i> .....						1.04	.20					.38		
North Hammond .....														
Ogdensburg .....					.06	.20	.76					.01	.06	
Potsdam .....					* .02	2.94	.44					.26		
<i>Great Lakes</i> .....	0.02	0.00	0.00	0.00	0.03	0.21	0.18	0.00	0.00	0.00	0.05	0.18	0.01	0.00
Dunkirk .....	T.					.39						.23		
Buffalo .....	.02					T.	T.					.32		
Eden Centre .....	T.					.15					.50			
Adams Centre .....														
Brockport .....														
<i>Rochester</i> .....	.03					.20	.02				T.	.06		
Fort Niagara .....						.24						.27		
Hess road station .....					.12	.06						.18		
<i>Baldwinsville</i> .....					.24	.40	T.					.27		
Albion .....														
Lyndonville .....														
Demster .....	.03					.32	.75					.06		
Oswego .....	.01					.20	.65					.06		
<i>Palermo</i> .....						.28	.53					.10		
Phoenix .....	.22					.24	.25					.32	.30	
Lyons .....						.16	.19					.32		
Erie, Pennsylvania .....						.06					.20	.36		
<i>Central Lakes</i> .....	0.05	0.00	0.00	0.00	0.01	0.08	0.02	0.00	0.00	0.00	0.02	0.07	0.00	0.00
Fleming .....						T.								
Geneva .....												.35		
Watkins .....											.10			

## STATE METEOROLOGICAL BUREAU.

189

TATION FOR AUGUST, 1893 — INCHES — (Continued).

15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total.
0.00	T.	0.13	0.07	0.82	1.60	0.02	0.00	T.	2.85	0.00	0.00	0.00	0.02	0.62	0.00	0.00	7.16
.....	.....	.04	.04	.03	2.45	T.	.....	.02	3.81	.....	.....	.....	.....	.28	.....	.....	7.16
.....	T.	.22	.....	1.80	.90	.....	.....	.....	3.55	.....	.....	.....	.10	.....	.....	.....	7.06
.....	.....	.32	.....	2.00	.80	.....	.....	.....	2.00	.....	.....	.....	.....	.70	.....	.....	7.19
.....	.....	.....	.12	.05	2.53	.02	.....	T.	2.05	.....	.....	.....	.....	.70	.....	.....	6.65
.....	.....	.09	.20	.23	1.30	.10	.....	*	13.80	.....	.....	.....	.....	.98	.....	.....	7.72
0.00	0.00	0.43	0.04	0.26	0.28	T.	0.00	0.00	3.19	0.10	0.13	0.16	0.55	0.67	T.	0.00	7.05
.....	.....	.22	.....	T.	.01	.....	.....	.....	2.62	.....	.34	.....	1.36	.54	T.	.....	7.21
.....	.....	.11	.....	.30	.....	.....	.....	.....	3.60	.41	.....	.71	.....	1.15	.....	.....	5.93
.....	.....	.36	.....	.37	.....	.....	.....	.....	2.89	.....	.15	.....	.....	.80	.....	.....	5.31
.....	.....	.....	.....	.....	.....	.....	.....	.....	4.00	.02	.....	.....	.....	0.04	.....	.....	4.11
.....	.....	.35	.02	.04	.40	T.	.....	.....	3.23	T.	.41	.....	.....	.93	.....	.....	6.64
.....	.....	.60	.....	.60	1.15	.....	.....	.....	3.17	.....	.....	.....	.....	.90	.....	.....	6.62
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.76	.15	.08	.10	.....	.....	.....	2.40	.08	.03	.06	1.25	.48	.....	.....	8.08
.....	.....	1.16	.16	1.10	.3	.....	.....	.....	4.21	.29	.....	.54	1.79	.49	.....	.....	12.48
0.00	0.00	0.26	0.12	0.20	0.26	0.09	0.06	0.06	1.12	0.98	0.00	1.30	0.62	1.12	0.03	0.00	6.62
.....	.....	.15	.12	.31	.16	.12	.....	.....	.42	1.82	.....	.95	1.25	1.02	.06	.....	6.64
.....	.....	.84	.13	.41	.22	.....	.....	.12	1.81	.13	.....	1.64	.....	1.22	.....	.....	6.57
0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.04	0.00	0.00	0.05	0.00	1.58	0.00	0.00	5.76
.....	0.02	.....	.....	.....	.....	.....	.....	.....	2.04	.....	.....	.08	.....	1.58	.....	.....	5.76
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
0.00	0.00	0.55	0.20	0.05	0.02	0.06	0.15	0.00	1.18	0.03	0.06	0.06	0.57	2.72	0.01	0.00	8.52
.....	.....	.33	.11	.21	.06	.12	.68	.....	2.88	.15	.....	.09	.95	2.14	.05	.....	9.98
.....	.....	.75	.61	.....	.26	.....	.....	.....	.42	.....	.....	.12	*	+5.25	.....	.....	9.00
.....	.....	.86	.27	.....	.04	.....	.....	.....	1.04	.....	.....	.08	1.23	4.28	.....	.....	9.20
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.34	.28	.....	.05	.....	.37	.....	1.67	.08	.....	.04	.68	4.06	.....	.....	9.14
.....	.....	.....	.....	.....	.....	.....	.....	.....	.41	.01	.....	.09	*	+2.75	.....	.....	6.75
.....	*	1.01	.16	.17	.....	.01	.....	.....	1.81	.....	.40	.....	.....	3.10	.....	.....	5.69
.....	.....	+ .97	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	9.92
0.00	0.04	0.38	0.05	0.01	0.00	T.	0.00	0.01	0.32	0.06	0.00	0.44	0.81	2.47	0.07	0.00	5.36
.....	0.09	0.22	.05	.....	.....	.....	.....	.....	.....	T.	.....	.10	.29	4.21	.....	.....	5.60
.....	T.	.32	.....	T.	.....	T.	.....	.....	.....	.....	.....	T.	.8	3.88	T.	.....	4.91
.....	.....	.65	.10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.56	4.00	.....	.....	5.96
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.29	.....	T.	.....	.....	.....	.....	.60	.....	.....	.22	.05	4.14	.....	.....	5.61
.....	.....	.30	.14	.....	.....	.....	.....	.....	.....	.....	.....	.....	*	+3.30	.....	.....	4.85
.....	.....	.65	.01	.....	.....	.....	.....	.....	.....	T.	.....	T.	.59	2.67	.....	.....	4.48
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.19	.07	T.	.....	.....	.....	.....	.14	.54	.10	.....	1.54	1.50	.16	.....	.....	5.15
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.28	.....	.10	.....	.....	.....	.....	.55	.08	.....	.56	.13	2.00	.....	.....	4.80
.....	.....	.36	T.	.01	.....	.....	.....	.....	.43	.....	.....	.74	.27	3.76	.....	.....	6.47
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.58	.03	.....	.08	.....	.....	.....	.63	.....	.....	1.30	.15	1.93	.....	.....	5.51
.....	.....	.....	T.	.08	.....	.....	.....	.....	.18	.63	.....	.09	1.36	.73	.90	.....	4.83
.....	.....	.55	.04	T.	.....	.....	.....	.....	1.18	.26	.....	1.11	3.50	.58	.....	.....	7.89
.....	.26	.06	.24	.....	.....	.....	.....	.....	.....	.....	.....	T.	.46	1.95	.....	.....	8.61
0.00	T.	0.34	0.06	0.05	0.06	0.03	0.00	0.05	0.72	0.07	0.00	0.67	0.05	1.22	0.00	0.00	3.58
.....	.....	.34	.....	.21	.....	.15	.....	.....	.64	.....	.....	.82	.....	.....	.....	.....	2.01
.....	.....	.....	.....	.....	.....	.....	.....	.....	.91	.20	.....	.45	.01	1.89	.....	.....	4.53
.....	.....	.....	.37	.....	.32	.....	.....	.25	.....	.06	.....	1.35	.....	1.00	.....	.....	3.35

## DAILY AND MONTHLY PRECIPITATION

STATIONS.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<i>Central Lakes (C'd)</i>														
Romulus .....	.27					.14						.01		
Ithaca .....	T.				.05	.25	.08				T.	T.		
Penn Yan .....														
Average .....	0.12	0.00	T.	T.	0.05	0.25	0.21	T.	0.00	T.	0.07	0.23	0.01	0.00

\*Amount included in next measurement. † Not used in computing the averages. ‡ Record

TATION FOR AUGUST, 1893 — INCHES — (*Concluded*).

15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total.
.....	.....	.27	.....	.04	.....	.....	.....	.....	.73	.....	.....	.48	.23	1.98	.....	.....	4.15
.....	T.	.51	.05	T.	.....	.....	.....	.....	1.30	.10	.....	.27	.....	1.25	.....	.....	8.86
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
0.00	0.01	0.32	0.07	0.19	0.35	0.04	0.02	0.01	1.60	0.17	0.04	0.45	0.35	1.66	0.01	T.	6.32

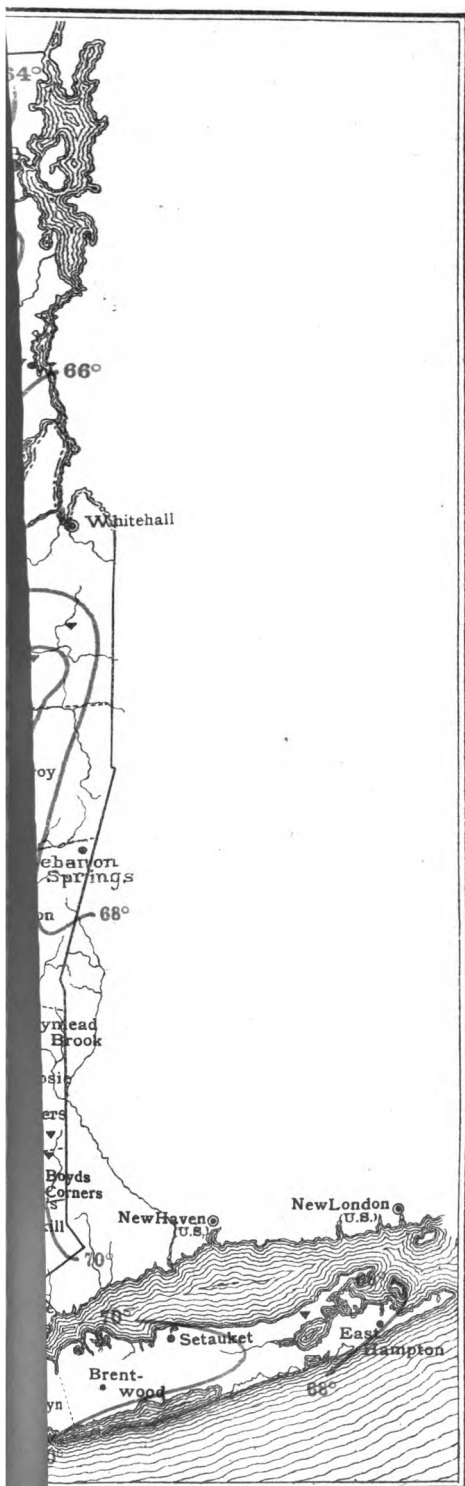
for the month incomplete. | Reports too late to be used in computing the averages T Trace.



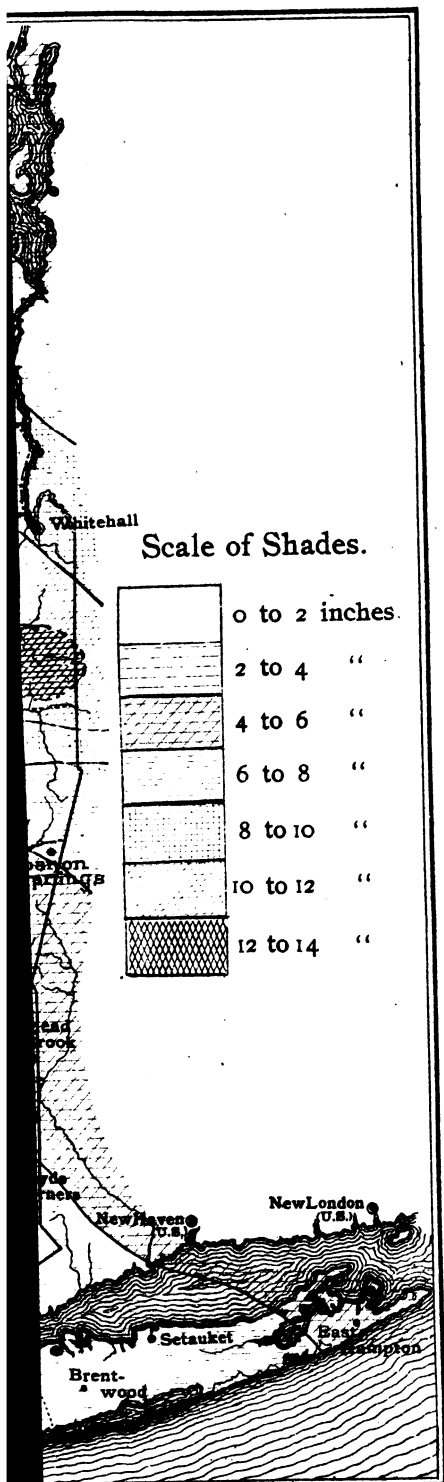
## TEMPERATURE AND

STATION.	County.	TEMPERATURE (DEGREES FAHR.).						
		Normal for the month of August.	Length of record, years.	Record begins.	Record ends.	Mean for August, 1893.	Departure from the normal.	EXTREMES OF MEAN TEMPERATURE FOR AUGUST.
								Highest. Year. Lowest.
<i>Western Plateau</i> .....		66.2				67.1	+0.9	
Angelica*.....	Allegany.....	65.0	11	1854	1893	64.3	-0.7	69.1 1872 61.2
Humphrey.....	Cattaraugus.....	68.0	11	1883	1893	66.2	+1.2	66.7 1888 62.2
Elmira*.....	Chemung.....	68.5	14	1851	1893	70.7	+2.2	
<i>Eastern Plateau</i> .....		66.0				66.8	+0.8	
Cooperstown.....	Otsego.....	65.6	39	1854	1893	64.9	-0.7	71.5 1887 61.2
Waverly.....	Tioga.....	66.4	12	1882	1893	68.7	+2.3	69.4 1892 64.2
<i>Northern Plateau</i> .....		64.8				65.2	+0.4	
Lowville.....	Lewis.....	64.8	25	1827	1893	65.2	+0.4	
<i>Coast Region</i> .....		71.0				72.7	+1.8	
New York City.....	New York.....	71.7	23	1871	1893	74.0	+2.3	74.3 1877 70.4
Setauket.....	Suffolk.....	70.2	9	1886	1893	71.4	+1.2	71.4 1893 68.4
<i>Hudson Valley</i> .....		70.7				71.3	+0.6	
Albany*.....	Albany.....	71.0	20	1874	1893	72.0	+1.0	76.2 1885 66.6
Honeymead Brook.....	Dutchess.....	67.8	10	1884	1893	68.6	+0.8	69.7 1888 66.2
Poughkeepsie*.....	".....	71.7	22	1826	1893	70.3	-1.4	
West Point.....	Orange.....	72.3	65	1824	1893	74.3	+2.0	78.0 1870 67.6
Rondout.....	Ulster.....	70.8	22	1823	1892			75.6 1831 66.2
<i>Mohawk Valley</i> .....		67.5				68.3	-0.8	
Utica*.....	Oneida.....	67.5	33	1826	1893	69.3	-0.8	72.9 1828 58.6
<i>Champlain Valley</i> .....		67.2				65.4	-1.8	
Plattsburgh Barracks.....	Clinton.....	67.2	37	1839	1893	65.4	-1.8	71.7 1843 64.5
<i>St. Lawrence Valley</i> .....		68.4				67.8	-0.2	
Madison Barracks.....	Jefferson.....	69.4	29	1829	1893	69.0	-0.4	73.6 1870 66.2
Canton*.....	St. Lawrence.....	67.7	30	1862	1892			74.0 1876 62.7
North Hammond.....	".....	69.7	15	1866	1892			77.2 1873 61.6
Potsdam*.....	".....	66.7	25	1828	1893	66.7	0.0	70.5 1846 60.5
<i>Great Lakes</i> .....		68.4				68.9	+0.6	
Buffalo.....	Erie.....	68.8	23	1871	1893	69.0	+0.2	73.3 1872 65.5
Rochester.....	Monroe.....	68.4	22	1871	1893	69.0	+0.6	73.3 1876 66.8
Fort Niagara.....	Niagara.....	69.7	26	1829	1893	71.6	+1.9	
Baldwinsville.....	Onondaga.....	66.4	18	1849	1893	69.1	+2.7	
Oswego.....	Oswego.....	68.4	23	1871	1893	68.0	-0.4	73.1 1872 63.2
Palermo.....	".....	67.9	40	1854	1893	67.5	-0.4	71.6 1887 61.6
Lyons.....	Wayne.....	67.4	8	1860	1893	68.7	+1.3	
Erie, Pennsylvania.....	Erie.....	69.3	20	1874	1893	69.0	-1.3	73.0 '76-'81 66.0
<i>Central Lakes</i> .....		67.8				68.2	+0.4	
Geneva.....	Ontario.....	68.0	16	1854	1893	68.7	+0.7	
Ithaca.....	Tompkins.....	67.5	15	1879	1893	67.6	+0.1	71.5 1881 64.6
Average departure ..							+0.5	

\* Location of the instruments has been changed during the period covered by the record.







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## STATE METEOROLOGICAL BUREAU.

193

## FALL STATISTICS FOR AUGUST.

STATION.	County.	RAINFALL (INCHES).									
		Average for the month of August	Length of record, years.	Record begins.	Record ends.	Total for August, 1893.	Departure from the average.	EXTREMES OF MONTHLY PRECIPITATION FOR AUGUST.			
								GREATEST.		LEAST.	
								Amount.	Year.	Amount.	Year.
<i>Western Plateau</i> .....		4.14	...	...	...	5.53	+1.88	...	...	...	...
Angelica .....	Allegany	4.24	9	1856	1893	5.22	-0.98	6.72	1890	1.83	1886
Humphrey .....	Cattaraugus	4.65	11	1883	1893	5.82	-1.17	10.11	1886	1.63	1889
Elmira .....	Chemung	3.54	13	1852	1893	5.54	-2.00	6.45	1860	1.16	1854
<i>Eastern Plateau</i> .....		4.27	...	...	...	6.17	+1.90	...	...	...	...
Cooperstown .....	Otsego	4.07	39	1854	1893	7.59	-3.52	9.08	1885	0.63	1876
Port Jervis .....	Orange	4.39	9	1880	1893	5.63	+1.24	6.23	1892	1.32	1883
Waverly .....	Tioga	4.34	12	1882	1893	5.29	+0.95	6.31	1891	1.23	1889
<i>Northern Plateau</i> .....		3.28	...	...	...	8.65	+5.37	...	...	...	...
Lowville .....	Lewis	3.28	23	1827	1893	8.65	+5.37	...	...	...	...
<i>Coast Region</i> .....		4.82	...	...	...	6.92	+2.10	...	...	...	...
New York city .....	New York	4.87	23	1871	1893	7.18	-2.31	10.42	1875	1.18	1886
Setauket .....	Suffolk	4.76	9	1885	1893	6.65	+1.89	6.65	1893	3.00	1886
<i>Hudson Valley</i> .....		4.89	...	...	...	6.38	+2.00	...	...	...	...
Albany .....	Albany	3.88	20	1874	1893	7.21	-3.83	7.21	1893	0.53	1879
Honeynead Brook ..	Dutchess	4.90	10	1884	1893	5.31	-0.41	8.55	1885	1.35	1886
West Point .....	Orange	4.87	45	1840	1893	6.62	-1.75	11.75	1868	0.05	1876
Boyd's Corners .....	Putnam	5.52	10	1868	1893	...	...	10.04	1867	1.92	1869
Rondout .....	Ulster	3.80	22	1830	1893	...	...	8.34	1892	0.65	1848
<i>Mohawk Valley</i> .....		3.77	...	...	...	6.57	+2.80	...	...	...	...
Utica .....	Oneida	3.77	39	1826	1893	6.57	+2.80	11.44	1832	0.72	1826
<i>Champlain Valley</i> .....		3.24	...	...	...	5.76	+2.52	...	...	...	...
Plattsburgh Barracks	Clinton	3.24	32	1840	1893	5.76	+2.52	7.18	1892	0.37	1876
<i>St. Lawrence Valley</i> ..		2.36	...	...	...	9.63	+6.35	...	...	...	...
Malone .....	Franklin	3.32	13	1890	1893	9.98	-6.60	...	...	...	...
Madison Barracks ..	Jefferson	3.00	32	1840	1893	9.00	-6.00	9.00	1893	0.47	1881
North Hammond .....	St. Lawrence	3.61	15	1866	1892	...	...	11.78	1892	0.37	1874
Potsdam .....	"	3.47	25	1828	1893	9.92	+6.45	9.92	1893	0.31	1845
<i>Great Lakes</i> .....		2.95	...	...	...	5.16	+2.21	...	...	...	...
Buffalo .....	Erie	3.29	23	1871	1893	4.91	-1.62	10.63	1885	0.05	1876
Rochester .....	Monroe	3.15	22	1871	1893	5.61	-2.46	7.26	1886	0.36	1876
Port Niagara .....	Niagara	2.56	36	1841	1893	4.85	-2.29	7.21	1849	0.33	1876
Oswego .....	Oswego	2.68	23	1871	1893	6.47	-3.79	6.47	1893	0.29	1874
Palermo .....	"	2.69	40	1854	1893	5.51	-2.82	7.45	1892	0.41	1866
Erie, Pennsylvania ..	Erie	3.34	20	1874	1893	3.61	-0.27	7.97	1885	0.98	1876
<i>Central Lakes</i> .....		3.54	...	...	...	4.20	-0.65	...	...	...	...
Geneva .....	Ontario	3.60	24	1841	1893	4.53	-0.93	...	...	...	...
Ithaca .....	Tompkins	3.49	15	1879	1893	3.86	-0.37	8.14	1885	0.39	1881
Average departure.							+2.57	...	...	...	...

## Meteorological Summary for September, 1893.

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The average atmospheric pressure (reduced to sea-level and 32 degrees Fahr.)) for the State of New York during September, was 30.03 inches. The highest barometer was 30.38 inches at Albany on the twelfth; and the lowest was 29.54 inches, also at Albany, on the sixteenth. The mean barometer was highest in the southeastern part of the State, and lowest near the Great Lakes. The average of the mean pressure at six stations of the National Bureau was 0.03 inch below the normal value.

The mean temperature of the State, as derived from the records of fifty-seven stations, was 57.0 degrees; the highest general daily mean being 67.7 degrees on the fourteenth, and the lowest 47.0 degrees on the thirtieth. The highest local monthly mean was 64.0 degrees, at New York city; and the lowest was 50.3 degrees at Number Four, Lewis county. The maximum temperature reported during the month was 86 degrees at Waverly on the fifth, and at Erie, Pa., on the fifth and seventh; while the minimum was 25 degrees at South Kortright, on the thirtieth. The mean monthly range of temperature was 43 degrees; the greatest range being 55 degrees at Varysburgh, and the least 35 degrees at Setauket. The mean daily range was 19 degrees; the greatest daily range being 44 degrees at Varysburgh on the twenty-fifth, and the least 3 degrees at Plattsburgh Barracks on the sixteenth. The mean temperatures of the various sections of the State were as follows: The Western plateau, 57.2 degrees; the Eastern plateau, 56.0 degrees; the Northern plateau, 52.2 degrees; the Coast region, 62.0 degrees; the Hudson valley, 58.5 degrees; the Mohawk valley, 56.7 degrees; the Champlain valley, 54.6 degrees; the St. Lawrence valley, 55.0 degrees; the Great Lake region, 59.3 degrees; and the Central Lake region, 58.0 degrees. The average of the mean temperatures at twenty-three stations possessing records for previous years was 2.5 degrees below the normal; the values being deficient at all stations excepting Fort

Niagara. The month was the coldest September on record at the weather bureau stations at Albany and Oswego, whose records cover nineteen and twenty-three years, respectively. The temperatures were also the lowest recorded for this month at Honeymead Brook, Plattsburgh and Potsdam.

The mean relative humidity was 77 per cent. The mean dew point was 51 degrees.

The average precipitation, as derived from the records of seventy-eight stations, was 3.20 inches of rain. The heaviest precipitation, ranging between 4 and 6 inches, obtained over limited areas of the three plateaus and the eastern highlands; while the least general amount is found on the shores of Lakes Erie and Champlain, and the St. Lawrence and Delaware rivers. The maximum local amount was 5.96 inches at Newark valley, and the minimum was 1.13 inches at Erie, Pa. The duration and amount of the heaviest rains of September are exhibited in the following table of meteorological data. In western New York and the Eastern and Northern plateaus, the heaviest rains occurred generally on the seventh, and in the coast and Hudson valley on the fifteenth and sixteenth. The average precipitation at twenty-four stations possessing records for previous years was 0.21 inch below the normal amount. The rainfall at Erie, Pa., was the least recorded for September during twenty-one years of observation. Excesses over the normal occurred at seven scattered stations.

The average number of days on which the precipitation amounted to 0.01 inch or more was 9.4. The number was in excess of the general average in the Eastern and Northern plateaus, the St. Lawrence valley and Great Lake region. The average number of clear days was 9.3; of partly cloudy days, 10.6, and of cloudy days, 10.1. The average cloudiness was 53 per cent (overcast = 100 per cent), which is considerably above the usual amount for this month.

The prevailing direction of the wind was from the west. The average total wind travel at six stations of the National Bureau was 6,829 miles; being above the average for previous years at all stations.



Thunderstorms were reported at Eden Centre on the first; at Humphrey and Rondout on the fifth; on the seventh at twenty-one stations in all but the northern section; on the fifteenth at nine stations of all regions; on the sixteenth at five stations of central and southeastern New York; on the eighteenth at Eden Centre; on the nineteenth at Eden Centre and Humphrey; at Eden Centre on the twenty-second, twenty-third, twenty-fourth and twenty-fifth; and on the twenty-eighth at Eden Centre and Baldwinsville.

Hail fell generally over the southern tier of counties on the seventh and fifteenth; at Angelica and Arcade on the sixteenth, and at Eden Centre on the seventeenth and eighteenth.

Light frosts occurred in the Hudson valley on the second; over the plateaus on the third and ninth, and in the northern section on the eighteenth. Killing frosts were reported from the northern section on the twenty-first, and generally from exposed localities after the twenty-fifth.

The data for this summary have been obtained from the records of forty-nine Voluntary Observers, six Weather Bureau Stations, five Military Posts, and seventeen Special Rainfall Observers.

During September the weather of New York was influenced by eight areas of high and nine areas of low pressure; the latter being about the usual number of storms passing near this State in September of previous years. With two exceptions these depressions moved eastward over Canada or northern New York; the dates of nearest approach to this State being the first, fifth, seventh, sixteenth, twenty-first and twenty-fifth. A powerful cyclone which remained over the Gulf of Mexico and southern States from the seventh to the twelfth tended to give northerly winds and a decrease of temperature in the central and northern States. The last storm of the month, which was central over the Atlantic ocean beyond the New England coast on the twenty-eighth and twenty-ninth, caused light rains in the northeastern States on these dates. The depressions which passed near the State during the first half of the month were moderate in strength, and the accompanying rainfall was slight, excepting in the case of the third area. This disturbance gave rise to a

severe thunderstorm through the southern tier of counties on the seventh, attended by high winds and hail. Buildings were unroofed or demolished, crops destroyed, and a large quantity of timber prostrated by this storm; the damage in the Chemung valley being estimated at over \$200,000. The storm of the sixth developed a steep pressure gradient and gave the maximum wind velocities of the month along the lakes, with general rains.

The areas of high pressure, which were more numerous than usual, passed eastward in the vicinity of New York on and about the second, sixth, ninth, twelfth, seventeenth, twenty-first, twenty-fourth, and twenty-sixth to thirtieth. The central pressure within these areas was but little above the normal, excepting in the case of the third, fifth, and eighth of the series, which gave barometer readings of about 30.4 inches. The last anti-cyclone of the month caused the first general frost of the season and a snowfall amounting to several inches in the mountainous regions of the State.

The average temperature of the State was below the normal on every day excepting the thirteenth, fourteenth, fifteenth and nineteenth. The most noteworthy depressions of temperature occurred in conjunction with the persistent low pressure over the southern States early in the month, and with the extensive area of high pressure covering the northeastern States during the last week. Owing in part to the prevalence of cloudy weather, however, the temperature did not fall so low as it frequently does in September, and serious frosts were generally averted until the close of the month.

By the first of September rye seeding and tobacco cutting were in progress, and hops had been picked in the neighborhoods of Dutchess county. Corn was generally cut during the first week, with favorable weather, and the conditions were also favorable for seeding and other farm work. By the middle of the month rye seeding was completed in the southeastern section, buck-wheat was being harvested; tobacco was nearly all housed. In the north, during the third week the weather was unfavorably cool and wet, and the potato crop was seriously threatened with rot. Crops were fortunately generally secured before the killing frost of the thirtieth.

## METEOROLOGICAL DATA

LOCATION OF STATIONS.			BAROMETER.						HUMIDITY.		TH.		
STATIONS.	County.	Elevation, feet.	Mean.	Highest.	Date.	Lowest.	Date.	Monthly range.	Mean relative.	Dew point (degrees).	Mean of tri-daily observations.	Mean of maximum and minimum.	Highest.
<i>Western Plateau.</i>													
Alfred Centre	Allegany	1824										57.2	84
Angelica		1340									55.3	55.6	73
Friendship	"	1850	30.05	30.31	26	29.73	16	0.58	77	49	55.7	56.4	80
Humphrey	Cattaraugus	1950									57.2	57.0	81
Arkwright	Chautauqua	1260										57.1	76
Elmira	Chemung	863									60.4	*60.4	
LeRoy	Genesee	888										57.3	79
Mt. Morris	Livingston	625										56.7	88
Lockport	Niagara	616										59.9	88
Victor	Ontario	650											
Wedgewood	Schuyler	1350											
Addison	Steuben	1000									56.9	57.6	83
South Canisteo	"	1480							80	50	54.9	55.9	80
Arcade	Wyoming	1557									55.1	55.2	76
Varysburg	"											58.1	84
Italy Hill	Yates	1650											
<i>Eastern Plateau</i>													
Binghamton	Broome	870									56.8	56.8	81
Oxford	Chenango	1250										55.6	80
Cortland	Cortland	1120										56.2	75
South Kortright	Delaware	1700										53.0	76
Brookfield	Madison	1850									56.2	56.1	76
Middletown	Orange	660							80	53	58.0	58.0	76
Port Jervis	"	470										58.3	78
Cooperstown	Otsego	1800									54.2	54.4	77
New Lisbon	"	1234									52.4	53.3	78
Quaker Street	Schenectady	973											
Perry City	Schuyler	1038									54.8	55.3	81
Waverly	Tioga	825									58.6	59.3	88
Minnewaska	Ulster	1800									54.6	55.8	78
<i>Northern Plateau</i>													
Lyon Mountain	Clinton	1917										52.2	73
Ampersand	Franklin	1600										51.0	73
Gloversville	Fulton	802									53.6	54.2	78
Constableville	Lewis	1246											
Lowville	"	900										53.1	75
Number Four	"	1671	30.03	30.31	12	29.60	16	0.71	81	45	50.2	50.3	71
Turin	"	1240										53.3	73
<i>Coast Region</i>													
New York City	New York	164	30.05	30.37	12	29.65	16	0.72	72	54		62.0	85
Willet's Point	Queens											64.0	84
Brentwood	Suffolk	75										63.6	85
Setauket	"	40							77	55	59.6	59.3	78
											61.8	62.1	79
<i>Hudson Valley</i>													
Albany	Albany	85	30.04	30.38	12	29.54	16	0.84	78	51		58.5	88
Lebanon Springs	Columbia	880										59.0	87
												55.0	77

## STATE METEOROLOGICAL BUREAU.

199

FOR SEPTEMBER, 1893.

TEMPERATURE — (IN DEGREES FAHR.).						SKY.			PRECIPITATION — (INCHES).						WIND.			
Date.	Lowest.	Date.	Monthly range.	Mean daily range.	Greatest daily range.	Date.	Least daily range.	Date.	Number of clear days.	Number of partly cloudy days.	Number of cloudy days.	Number of days on which 0.01 or more inches fell.	Total.	Greatest rainfall.	Duration.*	Date.	Total snow fall.	Prevailing direction.
9 29	26	48	21	44	9	7	14	7.2	15.0	7.8	9.5	3.52	2.95	12	00	7	.....	N. W.
5 31	30	48	19	32	21	7	14	2	14	14	5	4.90	2.60	...	...	8	.....	N. W.
5 30	27	49	22	36	9	11	2	6	16	8	14	2.67	0.97	...	...	7	.....	N. W.
a 30	k	50	22	38	7	10	14	5	20	5	11	3.65	1.50	0	40	7	.....	S. W.
10 30	29	51	21	33	21	8	14	2	17	11	12	3.83	1.12	3	00	15	.....	S. W.
7 40	u	36	13	20	21	8	20	...	...	...	...	...	...	...	...	...	...	...
5 24	26	45	19	29	9	8	7	16	6	8	9	3.72	1.55	1	05	7	.....	N. W.
15 31	k	51	24	37	9	15	29	4	17	9	11	4.33	2.95	12	00	7	.....	N. W.
5 31	k	51	24	37	9	15	29	4	17	9	9	2.95	1.65	...	...	7	.....	N. W.
b 36	30	46	21	38	9	14	ac	7	21	2	9	3.43	1.34	...	...	7	.....	S. W.
5 34	27	48	21	34	9	9	13	12	14	4	8	2.34	0.80	5	00	15	.....	S. W.
5 30	m	50	23	36	19	8	14	10	12	8	12	2.76	0.95	7	00	7	.....	N. W.
c 29	26	47	21	31	9	12	14	8	13	9	12	3.19	0.76	12	00	7	.....	.....
9 29	26	55	24	44	9	14	23	9	12	9	11	4.47	1.24	...	...	7	.....	.....
5 25	30	46	21	43	19	6	ad	8.7	12.4	8.9	10.2	3.73	3.21	...	...	15-16	.....	.....
5 31	30	50	25	33	13	13	14	5	18	7	10	4.50	2.30	4	00	15	.....	N. W.
5 32	n	48	24	35	22	12	b	...	...	...	12	3.94	1.30	...	...	15	.....	N. W.
5 36	30	45	16	24	z	7	15	...	...	...	9	4.17	1.63	...	...	7	.....	.....
5 25	30	51	24	43	19	6	7	...	...	...	5	3.76	1.26	6	00	15	.....	W.
5 30	27	45	19	33	12	6	16	12	7	11	8	2.62	1.01	...	...	7	.....	N. W.
10 30	m	87	17	29	19	9	18	...	...	...	9	2.54	1.03	6	20	15	.....	W.
d 35	30	43	19	28	x	7	25	9	12	9	10	1.98	0.76	3	00	7	.....	W.
5 32	27	45	21	34	1	10	ac	17	6	7	13	4.03	1.27	4	00	7	.....	S.
5 29	20	49	23	25	5	12	b	8	9	13	9	4.05	1.39	4	00	7	.....	S.
5 33	30	48	22	36	9	10	14	5	17	8	14	4.12	1.61	...	...	7	.....	S. W.
5 33	p	53	25	38	5	6	14	5	18	7	14	5.57	3.21	...	...	15-16	.....	N. W.
8 38	q	40	15	26	8	8	15	...	...	...	9	3.53	0.80	4	00	7	.....	.....
5 29	s	43	20	37	9	6	19	6.3	11.2	12.5	10.0	3.90	2.63	...	...	17	.....	.....
13 35	30	38	15	27	12	6	19	...	...	...	...	...	...	...	...	...	...	.....
5 30	30	48	23	36	12	8	15	11	6	13	9	3.94	1.05	5	20	7	.....	W.
e 29	27	46	22	37	9	9	15	6	12	12	10	2.82	0.82	...	...	17	.....	N. W.
5 29	r	42	21	30	5	8	15	8	13	14	10	5.46	2.68	...	...	17	.....	W.
5 32	27	40	18	32	9	9	b	5	14	11	11	3.36	0.82	...	...	7	.....	N.
5 36	29	88	17	33	22	5	15	5.3	7.0	7.7	9.8	2.25	0.80	2	00	16	.....	.....
19 45	30	39	14	25	22	7	27	15	8	7	12	2.27	0.60	...	...	15	.....	N. W.
5 45	29	40	18	26	aa	9	28	...	...	...	7	2.17	0.69	...	...	15	.....	N. E.
f 38	29	40	21	33	22	5	15	18	5	7	9	2.55	0.80	2	00	16	.....	S. W.
5 44	29	35	15	25	22	8	bb	13	8	9	11	2.02	0.72	...	...	16	.....	W.
19 31	27	43	17	36	19	5	17	9.0	11.1	9.9	8.6	3.62	2.00	...	...	15	.....	.....
5 38	27	41	17	28	5	7	17	10	10	10	11	3.20	1.28	...	...	15	.....	S.
5 31	27	46	23	36	5	10	bc	1	12	17	8	4.52	1.74	...	...	15-16	.....	W.

## METEOROLOGICAL DATA

LOCATION OF STATIONS.			BAROMETER.						HUMIDITY.		TEMP.		
STATIONS.	County.	Elevation, feet.	Mean.	Highest.	Date.	Lowest	Date.	Monthly range.	Mean relative.	Dew point (degrees).	Mean of tri daily obser- vations.	Mean of maximum and and minimum.	Highest.
Honeymead Brook....	Dutchess	450									56.0	56.2	76
Poughkeepsie.....	"	180										58.9	82
Wappinger's Falls....	"											59.7	79
West Point.....	Orange	167										63.5	88
Boyd's Corners.....	Putnam	546											
Carmel.....	"	500											
Stillwater.....	Saratoga										55.6	57.1	78
Rondout.....	Ulster	150											
Mohawk Valley.....	"											56.7	75
Rome.....	Oneida	445										56.7	75
Utica.....	"	537											
Champlain Valley....	"											54.6	79
Plattsburgh Barracks.	Clinton	125										54.8	72
Port Henry.....	Essex												
Glens Falls.....	Warren	340									54.1	54.3	79
Whitehall.....	Washington												
St. Lawrence Valley..	"											55.0	82
Malone.....	Franklin	810									52.8	52.8	78
Madison Barracks....	Jefferson	266										58.1	82
Watertown.....	"	486											
Canton.....	St. Lawrence	304											
North Hammond.....	"	300											
Ogdensburg.....	"	258									55.5	56.3	80
Potsdam.....	"	300									52.6	52.6	
Great Lakes.....	"											59.3	86
Dunkirk.....	Chautauqua	590	30.02	30.28	29	29.75	19	0.53	78	59		59.3	79
Buffalo.....	Erie	690										61.0	81
Eden Centre.....	"	690										60.1	82
Brockport.....	Monroe	520											
Rochester.....	"	621	30.04	30.30	26	29.68	16	0.62	79	51		59.0	79
Fort Niagara.....	Niagara	263										62.1	83
Hess Road Station...	Niagara	280							81	52		58.3	81
Baldwinsville.....	Onondaga	299									55.4	58.1	78
Albion.....	Orleans	521											
Oswego.....	Oswego	204	30.01	30.29	26	29.60	16	0.69	74	48		57.0	77
Palermo.....	"	460							77	49	55.8	55.7	77
Lyons.....	Wayne	407											
Erie, Pa.....	Erie	681	30.02	30.29	29	29.78	19	0.51	71	51		62.0	86
Central Lakes.....	"											58.0	80
Fleming.....	Cayuga	1000									58.7	57.9	79
Geneva.....	Ontario	459											
Watkins.....	Schuyler	737											
Romulus.....	Seneca	719										58.6	80
Ithaca.....	Tompkins	793	30.03	30.32	26	29.55	16	0.77			57.1	57.4	80
Mean.....			30.08	30.88	12	29.54	16	0.66	77	51		57.0	86

\* Mean of the tri-daily observations. † Mean of the maximum and minimum by the from the tri-daily observations are derived by the formula, (7 a. m. + 2 p. m. + 9 p. m.) ÷ 4 four hours.

(a) 5, 7; (b) 14, 15; (c) 5, 15; (d) 2, 5; (e) 13, 14; (f) 5, 19, 20; (g) 5, 13; (h) 10, 19; (i) 6, 14; (j) 21, 24, 26; (k) 23, 29, 30; (l) 23, 29; (m) 14, 16; (n) 3, 5; (o) 3, 9, 19; (p) 4, 19; (q) 6, 25; (r) 25

FOR SEPTEMBER, 1893 — (Concluded).

PERATURB—(IN DEGREES FARR.).										SKY.		PRECIPITATION—(INCHES).						WIND.	
Date.	Lowest.	Date.	Monthly range.	Mean daily range.	Greatest daily range.	Date.	Least daily range.	Date.	Number of clear days.	No of partly cloudy days.	Number of cloudy days.	Number of days on which 0.01 or more inches fell.	Total.	Greatest rainfall.	Duration.	Date.	Total snow fall.	Prevailing direction.	
19 36	29	40	30	30	9	9	29	9	14	17	10	4.52	1.75	...	...	15	S. W.		
19 34	m	48	24	35	4	11	8	13	11	6	7	3.43	2.00	...	...	15	N.		
19 38	30	41	19	30	7	8	6	13	11	6	12	3.14	1.28	5	00	15	N. W.		
19 41	27	42	21	36	19	8	15	...	...	...	8	2.84	1.20	...	...	15	S. E.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
12 35	27	43	18	24	12	5	17	2	24	4	7	3.07	0.97	4	30	7	W.		
...	...	...	...	...	...	...	...	...	15	6	9	4.22	1.70	5	00	7	S.		
1 35	30	40	17	24	11	7	15	...	...	...	9.0	3.54	0.95	...	...	8	...		
1 35	30	40	17	24	11	7	15	...	...	...	9	3.54	0.95	...	...	8	...		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		
5 32	30	43	20	37	5	3	16	12.0	4.0	14.0	9.0	3.06	1.18	5	15	15-16	...		
15 32	30	40	18	32	12	8	16	...	...	...	9	2.12	0.62	...	...	16	S. W.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		
5 33	30	46	23	37	5	8	15	12	4	14	9	3.87	1.18	5	15	15-16	N.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		
12 33	30	43	20	35	12	6	17	8.7	9.3	12.0	10.0	2.47	0.66	...	...	17	...		
15 33	30	43	18	29	12	10	19	7	9	14	13	2.71	0.66	...	...	17	W.		
12 34	30	48	21	35	12	6	17	...	...	...	10	2.28	0.48	5	00	19	S.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		
13 39	41	21	32	5	12	14	9	...	...	...	9	1.88	0.28	8	30	2	N. W.		
13 33	30	...	...	...	...	10	...	...	...	...	7	8.00	0.64	...	...	4	S. W.		
7 31	30	42	18	40	3	4	20	9.1	11.1	9.8	10.6	2.60	1.30	15	00	7	...		
14 41	30	38	12	22	9	6	18	10	6	14	12	1.79	0.34	...	...	2.25	...		
14 40	30	41	14	30	9	7	19	3	22	5	11	2.71	0.95	...	...	7	N. W.		
11 34	30	48	32	39	10	11	15	6	6	18	11	5.46	1.30	15	00	7	S. W.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		
14 38	30	41	15	32	9	6	8	12	12	6	14	2.20	0.82	...	...	7	S. W.		
14 41	30	42	18	32	23	7	15	...	...	...	7	2.04	0.59	...	...	7	W.		
14 39	n	42	16	24	ab	8	cc	10	11	9	9	2.45	0.77	12	15	7	W.		
13 39	q	39	20	31	9	9	24	14	6	10	14	2.63	0.75	...	...	7	N. W.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		
14 40	30	37	15	28	9	4	20	9	10	11	18	2.81	0.83	...	...	7	S. E.		
13 31	30	46	21	40	3	9	25	13	11	6	8	2.80	0.66	4	15	19	W.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		
7 42	30	44	13	29	21	6	5	16	...	...	9	1.13	0.45	...	...	19	S. W.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		
5 37	27	42	18	32	9	7	15	7.7	14.3	8.0	7.0	3.33	2.00	5	10	7	...		
5 38	v	41	18	30	9	8	15	5	20	5	4	2.36	1.03	12	00	7	S.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		
5 37	27	43	19	32	9	8	13	10	...	...	12	3.26	1.66	6	30	7	W.		
5 39	27	41	17	32	9	7	15	8	15	8	10	4.38	2.00	5	10	7	S. E.		
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		
a 25	30	48	19	44	9	8	16	9.8	10.6	10.1	9.4	3.20	3.21	...	...	15-16	T. W.		

Draper thermograph. † Report received too late to be used in computing means. The means † Blank indicates that the duration is not shown in the original records, but is within twenty

(j) 3, 13; (k) 28, 30; (m) 27, 30; (n) 27, 29, 30; (p) 26, 30; (q) 29, 30; (r) 31, 35, 27; (s) 21, 25, 27; 1, 3; (ac) 6, 16; (ad) 7, 14, 16; (ae) 15, 29; (bb) 6, 18; (bc) 8, 15; (cc) 6, 11.

## DAILY AND MONTHLY MEAN TEM

STATIONS.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<i>Western Plateau...</i>	61	54	54	61	67	60	62	55	58	65	60	62	65	68
Alfred Centre.....	52	52	52	61	68	59	63	55	54	65	57	59	62	64
Angelica.....	58	52	50	57	64	59	62	55	54	64	58	62	65	68
Friendship.....	.....	.....	.....	61	66	60	61	54	54	67	59	60	64	68
Humphrey.....	64	56	52	59	67	63	68	56	59	65	63	60	61	66
Arkwright.....	63	53	54	64	65	59	66	54	59	63	62	62	65	69
Elmira.....	64	59	60	64	70	61	62	57	62	68	64	62	67	69
LeRoy.....	62	55	54	60	68	55	60	54	58	63	61	63	68	71
Mount Morris.....	60	54	53	59	66	56	56	55	56	64	60	62	66	70
Lockport.....	65	59	58	64	68	59	60	60	61	64	62	66	69	72
Victor.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Wedgewood.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Addison.....	59	56	54	59	65	60	60	56	57	68	60	58	62	68
South Canisteo.....	58	54	52	58	66	64	62	54	56	66	67	58	62	66
Arcade.....	61	45	50	61	66	58	62	51	58	64	55	63	65	68
Varysburg.....	62	56	54	65	65	65	58	60	62	66	64	65	68	66
Italy Hill.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
<i>Eastern Plateau...</i>	58	56	52	58	63	58	58	58	57	63	57	56	61	66
Binghamton.....	58	54	52	58	65	56	65	59	58	61	58	57	62	66
Oxford.....	58	58	53	61	63	60	57	54	56	62	60	56	62	67
Cortlandt.....	58	54	54	56	64	56	56	53	55	62	58	58	64	67
South Kortright.....	54	54	48	56	58	54	61	57	53	62	52	52	58	65
Brookfield.....	58	59	54	58	62	60	52	56	56	62	58	56	60	69
Middletown.....	.....	.....	.....	.....	.....	.....	62	62	60	65	60	56	59	66
Port Jervis.....	61	66	55	60	64	65	63	63	59	64	60	55	60	66
Cooperstown.....	56	54	50	54	62	56	54	57	55	64	56	54	60	66
New Lisbon.....	54	54	50	56	60	54	54	55	56	58	56	53	58	65
Perry City.....	58	51	52	60	67	55	53	53	54	64	57	56	63	67
Waverly.....	60	59	54	61	67	64	63	61	59	66	59	55	67	68
Minnewaska.....	58	54	53	58	66	60	58	65	58	64	55	56	58	62
<i>Northern Plateau...</i>	55	55	48	50	56	52	53	52	54	58	55	55	60	66
Lyon Mountain.....	.....	.....	.....	46	46	47	54	49	57	54	52	56	62	66
Amersand.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Gloversville.....	57	55	50	54	60	59	51	59	56	61	56	55	58	66
Constableville.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Lowville.....	54	56	48	52	60	54	54	52	54	60	54	55	63	68
Number Four.....	54	56	44	47	56	50	52	50	52	54	59	54	60	64
Turin.....	56	52	48	49	59	50	52	50	53	60	54	57	58	64
<i>Coast Region.....</i>	66	64	59	64	69	68	64	62	63	66	60	60	63	68
New York City.....	68	66	60	66	70	72	68	64	67	68	62	62	66	71
Willet's Point.....	66	62	62	65	74	68	62	64	64	70	60	62	64	70
Brentwood.....	66	64	56	61	65	65	62	59	58	62	58	56	59	60
Setauket.....	66	66	60	64	68	68	64	62	62	66	60	58	61	69
<i>Hudson Valley.....</i>	63	63	57	61	64	62	59	60	60	65	60	58	62	66
Albany.....	62	62	57	59	65	62	60	61	61	67	60	59	61	68
Lebanon Springs.....	60	58	50	55	60	54	54	56	58	60	56	53	56	65
Honeymead Brook.....	61	64	52	56	62	58	58	56	53	64	56	54	58	65
Poughkeepsie.....	61	65	58	60	63	65	57	64	67	66	68	60	62	68
Wappinger's Falls.....	64	64	56	62	71	65	62	60	60	66	60	57	62	68
West Point.....	70	68	71	72	68	68	66	63	64	70	67	66	70	70
Boyd's Corners.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Carmel.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Stillwater.....	60	60	53	60	60	60	56	60	58	65	56	59	62	68
Rondout.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Peeckskill.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
<i>Mohawk Valley.....</i>	59	64	50	55	58	63	57	55	54	62	60	58	62	68
Rome.....	59	64	50	55	58	63	57	55	54	62	60	58	62	68
Utica.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
<i>Champlain Valley.....</i>	59	60	51	52	58	54	53	56	56	61	53	54	56	64
Plattsburgh Barracks.....	58	61	50	52	57	54	54	58	58	60	53	53	54	64
Glens Falls.....	60	58	52	53	60	54	52	53	55	62	54	54	57	66

# STATE METEOROLOGICAL BUREAU.

203

## TEMPERATURES FOR SEPTEMBER, 1893.

15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	Monthly mean.
66	56	55	54	68	59	56	63	52	51	53	45	48	46	45	45	57.2
68	54	53	52	68	58	55	64	49	50	51	44	47	46	43	44	55.8
66	54	54	52	67	58	56	64	48	48	50	45	44	44	44	44	55.6
66	55	54	52	68	56	57	63	49	49	53	44	46	44	49	48	56.4
70	53	54	51	68	58	53	63	52	51	50	46	47	45	45	43	57.0
66	55	53	58	63	56	58	59	58	51	50	47	48	47	44	48	57.1
67	60	59	59	70	61	58	66	57	59	55	49	53	53	48	49	60.4
67	56	54	55	68	58	54	62	55	52	56	45	48	46	44	47	57.3
69	54	54	57	68	58	53	64	50	52	55	46	47	45	46	46	56.7
72	59	58	58	72	62	57	66	54	52	53	48	52	48	50	48	59.9
68	59	58	51	69	59	54	63	55	54	57	46	48	50	45	46	57.6
72	56	53	54	60	56	53	63	48	50	54	44	46	46	44	44	55.9
65	52	50	53	68	58	54	61	49	48	52	48	46	45	43	44	55.2
65	55	56	55	70	68	66	62	57	48	52	43	45	45	41	43	58.1
64	57	55	51	62	59	52	58	53	55	57	46	46	49	45	45	56.0
64	56	56	50	62	57	53	56	53	54	58	46	47	49	44	45	56.6
62	56	55	48	62	59	50	53	52	54	58	46	47	49	44	46	55.6
64	57	55	52	62	58	52	60	52	56	56	46	48	50	46	.....	56.2
64	56	50	48	54	56	50	56	50	51	54	44	44	44	43	40	53.0
65	57	54	53	61	58	50	61	51	56	55	52	45	51	48	48	56.1
66	61	59	54	64	64	58	58	56	59	61	48	48	52	46	49	58.0
66	61	59	52	66	62	56	56	60	57	56	48	46	48	46	48	58.3
63	58	54	51	62	58	48	57	50	53	56	44	45	46	45	44	54.4
61	57	54	48	64	57	49	56	48	52	55	42	45	47	44	40	53.3
65	57	54	52	66	60	49	60	50	51	57	47	45	48	46	44	55.3
66	59	58	52	69	63	55	62	55	56	60	47	52	56	47	49	59.3
61	54	55	53	54	59	52	59	58	56	60	48	46	48	44	45	55.8
64	56	46	45	58	54	46	54	50	51	52	48	45	46	45	43	52.2
66	54	49	47	55	50	46	54	54	48	48	42	46	46	47	42	51.0
62	56	50	48	62	58	50	52	52	52	55	46	45	46	49	46	54.2
66	59	48	44	59	56	45	55	50	50	56	44	44	46	44	43	53.1
64	54	44	41	55	52	43	52	46	46	49	40	44	44	40	42	50.3
62	56	47	46	59	56	46	55	49	50	52	44	45	46	46	43	52.3
70	65	60	59	70	67	60	62	64	62	65	53	53	53	50	53	62.0
72	68	62	62	72	69	63	68	67	63	69	52	54	56	52	52	64.0
68	62	61	60	72	64	60	64	62	64	62	52	56	50	56	53	62.6
69	58	55	66	66	69	57	58	64	60	63	51	51	52	44	52	59.3
70	64	60	60	66	66	60	60	64	62	66	58	51	55	50	54	62.1
67	60	58	54	65	63	54	57	58	57	59	50	48	50	48	48	58.5
66	62	58	53	66	64	53	59	59	58	60	51	49	52	49	50	59.0
69	57	57	54	60	60	52	54	55	52	56	46	45	48	46	44	55.0
67	58	56	53	66	61	52	55	56	54	60	48	46	48	44	47	56.2
62	64	60	52	68	62	54	54	56	55	59	52	50	50	50	48	58.9
62	60	60	54	66	64	54	60	62	57	62	50	49	50	48	48	59.7
67	64	64	62	65	70	59	60	60	64	62	51	50	52	52	52	63.5
66	58	54	50	64	62	52	58	56	56	56	49	47	50	48	50	57.1
66	60	54	50	55	.....	.....	.....	.....	.....	.....	48	48	51	50	44	56.7
66	60	54	50	55	.....	.....	.....	.....	.....	.....	48	48	51	50	44	56.7
65	62	53	50	61	59	50	50	57	54	52	47	48	48	48	46	54.6
65	64	54	52	60	60	49	52	58	56	52	48	50	48	47	46	54.8
65	60	52	49	62	58	50	48	56	51	52	46	47	48	48	46	54.3



## DAILY AND MONTHLY MEAN TEM

STATIONS.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<i>St. Lawrence Valley</i>	60	54	50	52	56	54	56	54	58	59	55	59	67	70
Malone.....	58	52	46	47	56	50	54	52	58	60	51	54	62	68
Madison Barracks..	64	58	56	56	58	56	56	59	61	60	58	64	68	70
Watertown .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Canton .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
North Hammond ..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ogdensburg.....	62	55	51	54	59	54	57	57	60	60	57	62	69	72
Potsdam*.....	54	50	46	51	52	54	57	50	55	56	58	57	68	68
<i>Great Lakes</i> .....	61	58	57	62	66	59	62	57	60	63	62	64	68	71
Dunkirk.....	64	58	57	64	66	61	68	58	60	65	62	66	68	73
Buffalo.....	65	58	56	65	67	60	63	60	62	66	64	68	70	74
Eden Centre .....	64	57	58	59	60	66	66	54	59	59	66	62	65	70
Brockport .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Rochester.....	66	56	56	62	69	56	60	56	62	64	62	66	70	72
Fort Niagara .....	67	59	62	63	67	60	65	63	57	66	61	67	70	74
Hess Road Station.	65	60	57	61	64	56	58	57	56	60	59	62	66	71
Baldwinsville .....	64	54	58	62	64	58	58	53	62	62	61	64	68	66
Albion .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Oswego .....	62	56	55	56	64	56	58	55	59	56	59	62	67	70
Palermo.....	60	59	57	56	68	56	54	55	56	62	58	60	64	64
Lyons .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Erie, Pennsylvania.	66	59	58	67	71	62	74	60	62	66	64	66	69	76
<i>Central Lakes</i> .....	64	58	55	60	68	57	57	56	58	65	61	60	67	68
Fleming.....	67	58	55	60	68	54	57	57	60	66	64	60	65	67
Geneva.....	66	60	56	58	68	58	59	56	58	64	60	62	67	70
Watkins .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Romulus.....	62	57	56	61	68	58	56	57	59	66	61	61	71	68
Ithaca.....	60	56	54	62	68	58	57	55	56	64	60	58	64	68
Monthly means.	60.9	59.3	58.3	57.5	62.5	58.7	58.1	56.5	57.8	62.7	58.3	58.6	63.0	67.7

\* Means of tri-daily observations    † Mean of the maximum and minimum by the Draper and minimum of the ordinary self-registering thermometers. The means from the tri-daily received too late to be used in computing averages.

TEMPERATURES FOR SEPTEMBER, 1893 — (*Concluded*).

15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	Monthly mean.
69	58	49	50	60	52	48	57	54	50	52	48	50	49	48	47	55.0
70	58	46	49	58	54	44	56	55	48	52	46	46	45	44	44	52.8
72	60	55	52	62	62	52	56	55	56	57	55	52	52	50	46	58.1
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
68	59	50	50	62	56	48	57	58	50	51	48	51	53	51	53	56.3
67	55	44	48	57	48	46	60	52	48	50	45	49	47	46	44	52.6
69	59	56	58	67	60	56	62	56	55	56	50	51	51	49	49	59.3
66	58	57	54	67	59	56	62	56	53	53	50	51	48	49	50	59.3
70	55	54	62	68	60	60	66	56	54	54	49	52	51	48	50	61.0
69	60	55	62	60	61	58	61	57	57	62	54	57	57	57	52	60.1
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
72	56	56	56	70	61	57	68	56	56	55	49	52	50	48	47	59.0
72	72	60	61	74	66	58	58	59	64	59	55	54	54	58	50	62.1
69	58	56	57	68	62	54	66	56	52	56	48	50	48	50	48	58.3
66	56	56	59	66	55	55	60	56	56	54	49	52	54	47	50	58.1
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
68	57	54	54	63	59	54	60	54	55	58	48	45	50	47	48	57.0
66	58	53	51	65	59	47	56	50	51	56	47	49	48	45	44	55.7
71	62	57	63	70	60	62	63	58	54	56	50	50	50	49	51	62.0
67	58	56	54	66	61	51	65	56	53	59	48	51	52	46	50	58.0
66	57	53	55	61	62	51	67	62	52	59	48	52	53	45	47	57.9
69	59	58	52	68	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
66	58	56	54	68	62	50	66	54	53	58	48	52	52	46	54	58.6
66	58	57	53	67	60	52	62	52	54	60	48	48	51	46	48	57.4
66.9	59.1	54.2	52.5	63.2	58.4	52.3	57.8	55.0	53.8	55.5	47.0	48.8	48.5	47.4	47.0	57.0

thermograph. Means for all stations not otherwise indicated are derived from the maximum observations are derived by the formula  $(7 \text{ A. M.} + 2 \text{ P. M.} + 9 \text{ P. M.} + 9 \text{ P. M.}) \div 4$ . || Reports

## DAILY AND MONTHLY PRECIPITA

STATIONS.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<i>Western Plateau</i> ..	0.01	0.09	0.00	T.	0.00	T.	0.17	?	0.00	0.00	0.02	0.00	0.07	0.02
Alfred Centre ..				T.			1.00	12.60						
Angelica ..		.15		T.			.97						.01	.02
Bolivar ..		.17					.94							
Friendship ..		T.		T.			1.50						T.	.06
Humphrey ..	.25			.05			.73						.08	.02
Little Valley ..		.33					.64				.33			
Cherry Creek ..				T.			.51					.08	T.	.06
Elmira ..		T.					1.55						.02	.05
Akron ..														
LeRoy ..		.15		.02			2.95						T.	
Avon ..														
Mt. Morris ..		.06					1.65						T.	
Lockport ..		.09					1.34						T.	
Victor ..														
Wedgewood ..														
Addison ..							.58						T.	T.
Atlanta ..	T.	.05					1.14							.05
Pine City ..		.04					1.42						.04	.07
South Canisteo ..		.12		T.		T.	.95						.12	.07
Arcade ..		.15					.76						.12	.02
Attica ..														
Castile ..														
Varysburg ..		.21		T.			1.24						.78	
<i>Eastern Plateau</i> ..	T.	0.03	T.	0.00	0.00	T.	1.15	T.	0.00	0.00	0.00	0.00	0.01	0.07
Binghamton ..							.80						.03	
Chenango Forks ..														
Oxford ..							1.15							.02
Cortland ..							1.63							.45
Bovina Centre ..		.30				T.	1.32							
Deposit ..														
South Kortright ..							1.22							
Brookfield ..							1.01							
Apulia ..														
Middletown ..							.78							.21
Port Jervis ..		.08					.76							.06
Warwick ..	.06	T.					.62							.12
Cooperstown ..		.03	.05				1.27							.01
New Lisbon ..							1.39							
Perry City ..		.04					1.61	.04					.04	.12
Newark Valley ..		.05					1.32							T.
Waverly ..							.91						.08	.04
Ellis ..							1.82						.08	.05
Minnewaska ..							.80							*
<i>Northern Plateau</i> ..	0.00	0.10	0.15	0.04	T.	0.00	0.72	0.00	0.00	0.00	0.00	0.00	0.00	T.
West Chazy ..		.23	.23		T.		.10							
Au Sable Forks ..														
Keene Valley ..														
Amersand ..														
Gloversville ..		T.	.16				1.05							T.
Constableville ..														
Lowville ..		.15	.18				.57							
Number Four ..		.27	.23				.78							
Turin ..		.11	.22				.82							
Boonville ..				.27			.78							
Galway ..														
King's Station ..			.09				.97							
<i>Coast Region</i> ..	0.12	0.11	0.00	0.00	0.07	0.00	0.39	0.12	0.00	0.00	0.00	0.00	0.00	0.07
New York City ..	.12	.07					.10	.57						.07
Willet's Point ..	.18				.35									.13
Brentwood ..	.20						.60							.15
Setauket ..	.07	.25					.50	.03						T.
Bedford ..	.03	.23					.77							T.

## STATE METEOROLOGICAL BUREAU.

207

TION FOR SEPTEMBER, 1893 — (INCHES).

15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	Total.
0.30	0.34	0.08	0.18	0.33	0.03	0.00	0.02	0.11	0.04	0.31	0.00	0.00	0.01	0.07	0.01	3.50
.....	.....	.....	.....	.80	.....	.....	.....	.10	.....	.40	.....	.....	.....	.01	.....	4.90
.53	.30	.....	.06	.07	.06	.....	.08	.12	.....	.32	.....	.....	.02	.01	.....	2.67
.48	.29	.....	.05	.61	.....	.....	.....	.21	.....	.43	.....	.....	.....	.49	.....	3.65
.81	.22	.04	.13	.29	.06	.....	.01	.11	.....	.40	.....	.....	T.	T.	.....	3.65
1.12	.37	.....	.60	.....	.14	.....	.....	.14	.....	.34	.....	.....	.04	.....	.....	3.83
.42	.28	.....	.30	.62	.....	.....	.....	.28	.....	.....	.....	.....	.....	.10	.....	3.29
.35	.27	.04	.06	.83	.36	.....	.04	.13	.....	.80	.....	.....	T.	.....	.....	2.98
1.25	.15	.15	.....	.22	.....	.....	.....	.18	.....	T.	.....	.....	.....	.15	.....	3.72
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.08	.37	.....	.10	.06	.....	.....	T.	T.	.10	.45	.....	.....	.08	.....	.....	4.83
.17	.37	.....	.11	.30	.....	.....	.....	.05	.07	.15	.....	.....	.....	.....	.....	2.95
.26	.66	.....	.13	.30	.....	.....	.06	T.	.....	.53	.....	.....	.04	.....	.....	3.43
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.80	.06	.....	.08	.08	.....	.....	.....	.18	.....	.38	.....	.....	.....	.18	.....	2.34
.11	.84	.06	.11	.55	T.	.....	.....	.13	.05	.23	.....	.....	T.	.16	.02	3.53
1.27	.09	.09	.16	.....	.....	.....	.03	.18	.....	.28	.....	.....	.....	.....	.10	3.77
.36	.15	.....	.20	.....	.....	.....	.....	.16	.04	.38	.....	.....	.05	.16	.....	2.76
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.60	.59	.15	.09	.25	.....	.....	T.	.08	.08	.80	.....	.....	T.	.....	.....	3.19
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.20	.76	.....	.13	.47	.....	.....	.06	.03	.02	.44	.....	.....	T.	.....	.....	4.47
1.30	0.34	0.05	0.06	0.28	T.	0.00	0.07	0.07	0.01	0.36	T.	0.00	0.01	0.06	T.	3.57
2.30	.23	.16	.07	.28	.....	.....	T.	.14	.....	.81	.....	.....	.....	.18	.....	4.50
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1.30	.38	.10	.10	.24	.....	.....	.02	.05	.....	.53	.02	.....	T.	.03	.....	3.94
.75	.25	.....	.59	.....	.....	.....	.04	.03	.....	.38	.....	.....	.....	.05	.....	4.17
1.35	.49	.....	.....	.....	.....	.....	.80	.13	.....	.37	.....	.....	.....	T.	.....	4.66
1.26	.38	.....	.38	.....	.....	.....	.....	.....	.....	.52	.....	.....	.....	.....	.....	3.76
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.11	.68	.09	.....	.55	.....	.....	.01	.01	.....	.16	.....	.....	.....	.....	.....	2.62
1.03	.10	.....	.03	.05	.....	.....	.08	.10	.....	.18	.....	.....	.....	.....	.....	2.54
.90	.17	.....	.08	.17	.....	.....	.....	.12	.12	.17	.....	.....	.....	.....	.....	1.93
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.96	.04	.....	.06	.10	.....	.....	T.	.12	.....	.26	.....	.....	.....	T.	.....	2.34
1.17	.60	.....	.02	.30	.01	.....	.06	.02	.....	.45	.....	.....	.04	.....	.....	4.03
1.20	.43	.....	.02	.36	.....	.....	.07	.02	.....	.46	.....	.....	.....	.16	.....	4.05
.98	.21	.....	.10	.39	.....	.....	T.	.03	.....	.32	.....	.....	.06	.19	.04	4.12
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
2.09	.45	.....	.10	.32	.....	.....	.02	.14	.....	.42	.....	.....	T.	.11	.....	5.96
2.86	.35	.06	.18	.27	.....	.....	.05	.14	.02	.41	.....	.....	.....	.23	.....	5.57
1.02	.32	.....	.07	.21	.....	.....	.....	.02	.02	.28	.01	.....	.01	.33	.01	4.17
.....	.....	.....	.....	.....	.....	.....	.....	.03	.....	.50	.....	.....	.....	.....	.....	3.53
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
0.43	0.38	0.34	0.01	0.40	T.	0.00	0.06	0.01	0.00	0.31	0.00	0.00	0.02	0.11	0.00	3.42
.04	.27	.18	.05	T.	T.	.....	.12	.04	.....	.34	.....	.....	T.	T.	.....	1.55
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.87	.50	.15	T.	.88	.....	.....	.08	.03	.....	.22	.....	.....	.....	.....	.....	3.94
.29	.27	.82	.....	.19	.....	.....	.03	.....	.....	.25	.....	.....	.....	.12	.....	2.42
.56	* +2.63	T.	.51	.....	.....	.....	.04	.....	.....	.22	.....	.....	.....	.22	.....	5.46
.27	.43	.68	T.	.23	.....	.....	.07	.....	.....	.37	.....	.....	.13	.03	.....	3.36
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.40	.28	.25	.....	.35	.....	.....	.14	.....	.....	.56	.....	.....	.....	.12	.....	3.17
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.90	.50	.....	.....	.62	.....	.....	.....	.....	.....	.18	.....	.....	.....	.39	.....	3.65
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
0.44	0.48	0.00	0.08	0.10	0.00	0.00	0.04	0.02	0.00	0.27	0.04	0.03	T.	0.01	0.00	2.32
.60	.44	.....	T.	.10	.....	.....	.01	.01	.....	.17	.01	.....	T.	T.	.....	2.27
.69	.82	.....	.15	.....	.....	.....	.....	T.	.....	.35	T.	.....	.....	.....	.....	2.17
.10	.80	.....	.....	.10	.....	.....	.20	T.	.....	.30	.....	.10	.....	.....	.....	2.55
.06	.66	.....	T.	.10	.....	.....	T.	.04	.....	.25	.....	.04	.....	.02	.....	2.02
.73	.19	.....	.02	.09	.....	.....	.01	.04	.....	.28	.17	.....	.....	.04	.....	2.59

## DAILY AND MONTHLY PRECIPITA

STATIONS.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<i>Hudson Valley</i> ....	T.	T.	0.01	0.02	0.07	0.01	1.07	T.	0.00	0.00	0.00	0.00	0.00	0.11
Albany .....		.01		.04			.64							T.
Bethlehem Centre ..					.35									T.
Lebanon Springs ..		.01	.13				1.20							T.
Honeymead Brook ..	T.					.12	1.09							T.
Pawling .....														
Poughkeepsie .....							.87							
Wappingers Falls ..		.02					.88		.03					.01
West Point .....	T.						*	†.90						
Boyd's Corners .....														
Carmel .....														
Southeast Reserv. r. ..														
Schodack Depot .....														
Stillwater .....				.05			.97							
Rondout .....							1.70							1.00
Easton .....				.08			1.19							
<i>Mohawk Valley</i> ....	0.00	0.00	0.00	0.18	0.00	0.00	0.31	0.95	0.00	0.00	0.00	0.00	0.00	0.00
Rome .....				.18			.31	.95						
Utica .....														
<i>Champlain Valley</i> ..	0.00	0.18	0.22	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Plattsburg Barracks ..		.35	.38				.10							
Port Henry .....														
Glens Falls .....			.05				.90							
Whitehall .....														
<i>St. Lawrence Valley</i> ..	0.00	0.15	0.35	?	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Malone .....		.16	.50				.18							
Madison Barracks ..	.31		.06				.38							.04
Watertown .....														
Canton .....														
DeKalb Junction .....		.31	.51				.21							
North Hammond .....														
Ogdensburg .....		.28	.32				.15							
Potsdam .....			*	†.64			.30							
<i>Great Lakes</i> .....	0.03	0.08	0.04	0.04	T.	T.	0.66	0.00	0.00	0.00	0.00	T.	0.01	0.18
Dunkirk .....		.34		.02			.07					T.	.05	
Buffalo .....	T.	.34	.34	.02			.95							T.
Eden Centre .....	.36		T.				1.30							1.25
Adams Centre .....														
Brockport .....														
Rochester .....		.13					.82						.02	.01
Fort Niagara .....							.59							.23
Hess Road Station ..		.07					.77							
Baldwinsville .....	.01		.15		.04		.75							.23
Albion .....														
Lyndonville .....														
Demster .....		.04		.24			.56							.15
Oswego .....		.01	.01	.07			.83							.04
Palermo .....			.32				.52							
Phoenix .....		.03		.11		T.	.79							.23
Lyons .....														
Erie, Pennsylvania ..												.02	T.	
<i>Central Lakes</i> .....	0.00	T.	0.00	0.00	0.00	0.00	1.58	0.00	0.00	0.00	0.00	0.00	0.05	0.14
Fleming .....							1.03							
Geneva .....							1.64						.22	
Watkins .....														
Romulus .....		T.					1.66						T.	.71
Ithaca .....							2.00						.04	T.
Penn Yan .....														
Average .....	0.02	0.07	0.08	0.03	0.01	T.	0.78	0.11	0.00	0.00	T.	T.	0.01	0.06

\* Amount included in next measurement. † Not used in computing the averages. ‡ Record

# STATE METEOROLOGICAL BUREAU.

209

ION FOR SEPTEMBER, 1893 — (INCHES) — (Concluded).

15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	Total.
.14 1.28	0.18 .34	0.02 T.	0.08 T.	0.30 .23	0.00 T.	0.00 T.	0.03 .01	0.06 .01	T. .01	0.18 .06	T. T.	0.00 T.	0.18 T.	0.86 .57	0.00 T.	3.78 3.20
1.75	+1.74 .26	T.	T.	.19 .07	T.	T.	.03	.16 .16	.31 .31	.16 .31	T.	T.	T.	.78 .54	T.	4.52 4.53
2.00 1.36 1.30	.17 .10	.14 T.	.04 .05	T. .02 .12	T.	T.	.01 .03 .15	T. .14 .10	T.	.08 .16 .17	T.	T.	T.	.34 .25 .10	T.	3.43 3.14 2.84
.36 .62 .47	.18 T.	T.	T.	.35 .20 1.61	T.	T.	.05	T.	T.	.04 .40 .19	T.	T.	T.	.32 .30 1.10	T.	3.07 4.22 5.08
0.76 .76	0.23 .23	0.30 .30	0.00 T.	0.35 .35	0.34 .34	0.00 T.	0.00 T.	0.00 T.	0.00 T.	0.00 T.	0.00 T.	0.00 T.	0.00 T.	0.12 .12	0.00 T.	3.54 3.54
0.42 .08	0.53 .62	0.02 .05	0.06 .11	0.22 .05	0.00 T.	0.00 T.	0.05 T.	T. T.	0.00 T.	0.64 .38	0.00 T.	0.00 T.	0.00 T.	0.08 T.	0.00 T.	3.00 2.12
.77	.44	T.	T.	.53	T.	T.	.10	.01	.90	T.	T.	T.	T.	.17	T.	3.87
0.36 .15 .40	0.27 .25 .16	0.41 .66 .18	0.04 .16 T.	0.10 .02 .48	0.01 .04 T.	0.00 T.	0.09 .10	0.01 .07	0.00 T.	0.19 .21 .15	0.00 T.	0.00 T.	0.21 .21	0.11 .12	0.01 T.	2.60 2.71 2.28
.59 .34 .20	.33 T. .60	.55 .18 .49	.05 T.	T.	T.	T.	.18 .15	T.	T.	.20 .16 .21	T.	T.	.01 .24 .41	.30 .18	.07 T.	3.18 1.88 3.00
0.33 .12 .35 .50	0.24 .26 .43 .35	0.11 T. .02 .15	0.11 .13 .08 .35	0.33 .32 .26	0.01 T.	0.08 T.	0.06 .02 .05 .20	0.02 .08 T. .10	0.08 .09 .02 .60	0.29 .34 .29	0.00 T.	T. T. T.	0.05 T. T.	0.08 T.	0.01 T.	2.64 1.79 2.71 5.46
.33 .42 .35	.12 .42 .40	.01 T.	.14 .26 .16	.27 .08	T.	T.	.05 .08	T. T.	.08 T.	.25 .32 .12	T.	T.	.05 .14 .09	.01 T.	T.	2.20 2.04 2.45
.31 .27	T.	T.	.39	T.	T.	T.	.08 .02	.02 .20	.03	T.	T.	T.	.08 T.	.07	T.	2.68
.35 .31 .30	.10 .13 .10	.45 .31 .35	T. T.	.74 .68 .66	T.	T.	.15 .04	T.	.02 T.	.26 .35 .55	T.	T.	.05 .05 .10	.10 .05	T.	3.31 2.81 2.80
.16 .17	T.	T.	.15 .06	.20 .45	.10 T.	T.	T.	.07 .05	T.	.26 .24	T.	T.	T.	.15	.07	2.32 1.13
0.43 .45 .23	0.14 T.	0.00 T.	0.11 .09	0.22 .21	0.00 T.	0.00 T.	T. T.	0.08 T.	T.	0.21 .40	0.00 T.	0.00 T.	T.	0.14 T.	0.00 T.	3.33 2.36
T. 1.05	.22 .35	T.	.26 .09	T.	T.	T.	T.	.04 .04	T.	.14 .38	T.	T.	T. T.	.23 .20	T.	3.26 4.38
0.61 T.	0.31 T.	0.13 T.	0.06 T.	0.27 T.	0.04 T.	T.	0.04 T.	0.08 T.	0.01 T.	0.27 T.	T.	T.	0.05 T.	0.11 T.	T.	3.20

for the month incomplete. | Reports too late to be used in computing the averages. T.—Trace.

## TEMPERATURE AND

STATIONS.	County.	TEMPERATURE - (DEGREES FAHR.).									
		Normal for the month of September.	Length of record, years.	Record begins	Record ends.	Mean for September, 1893.	Departure from the normal.	EXTREMES MONTHLY MEAN TEMPERATURE SEPTEMBER.			
								Highest.	Year.	Lowest.	
Western Plateau		59.5				57.7	-1.9				
Angelica*	Allegany	57.8	11	1854	1893	55.6	-2.2	61.1	1855	53.6	
Humphrey	Cattaraugus	59.2	11	1893	1893	57.0	-2.2	64.5	1844	52.7	
Elmira*	Chemung	61.6	15	1851	1893	60.4	-1.2	66.6	1891	56.9	
Eastern Plateau.		57.6				56.8	-0.7				
Cooperstown	Otsego	55.6	40	1854	1893	54.4	-1.2	66.7	1881	53.3	
Waverly	Tioga	59.5	11	1893	1893	59.3	-0.2	64.3	1891	55.7	
Northern Plateau.		57.2				58.1	+0.9				
Lowville	Lewis	57.2	25	1837	1893	53.1	-4.1				
Coast Region.		64.4				63.0	-1.4				
New York city	New York	65.3	28	1871	1893	64.0	-1.3	69.9	1884	60.8	
Setauket	Suffolk	63.5	8	1896	1893	62.1	-1.4	66.9	1891	61.6	
Hudson Valley.		62.8				59.4	-3.6				
Albany*	Albany	63.7	19	1874	1893	59.0	-4.7	70.9	1881	59.0	
Honeymead Brook	Dutchess	60.8	10	1884	1893	56.2	-4.6	64.9	1884	56.3	
Poughkeepsie*		63.5	22	1828	1893	58.9	-4.6				
West Point	Orange	65.0	61	1843	1893	63.5	-1.5	70.4	1870	60.3	
Rondout*	Ulster	62.0	21	1828	1892			67.7	1831	56.5	
Mohawk Valley.		59.0									
Utica*	Oneida	59.0	32	1826	1892			64.4	1891	52.6	
Champlain Valley		59.1				54.8	-4.3				
Plattsburgh Barracks.	Clinton	59.1	34	1839	1893	54.8	-4.3	65.3	45-'81	54.4	
St. Lawrence Valley		60.1				55.4	-4.7				
Madison Barracks.	Jefferson	60.7	29	1834	1893	58.1	-2.6	68.9	1865	56.3	
Canton*	St. Lawrence	60.4	31	1832	1892			70.4	1881	54.4	
North Hammond.	"	62.2	19	1866	1892			67.4	1869	55.3	
Potsdam*	"	57.2	24	1838	1893	52.6	-4.6	61.0	1846	52.0	
Great Lakes		61.1				59.3	-1.8				
Buffalo	Erie	61.8	23	1871	1893	61.0	-0.8	71.3	1881	57.5	
Rochester	Monroe	61.6	22	1871	1893	59.0	-2.6	67.2	1881	56.3	
Fort Niagara	Niagara	61.9	26	1839	1893	63.1	+1.2	67.1	1891	58.1	
Baldwinsville	Onondaga	59.4	20	1849	1893	58.1	-1.3				
Oswego	Oswego	61.4	23	1871	1893	57.0	-4.4	70.0	1881	57.0	
Palermo		59.8	39	1854	1893	55.7	-4.1	67.8	1851	54.2	
Lyons	Wayne	59.8	6	1860	1892						
Erie, Pennsylvania	Erie	63.3	21	1873	1893	62.0	-1.3	71.7	1881	58.1	
Central Lakes		61.0				57.4	-3.6				
Geneva	Ontario	61.2	10	1856	1892			67.6	1865	58.6	
Ithaca	Tompkins	60.9	15	1879	1893	57.4	-3.5	71.2	1881	56.4	
Average departure....							-2.5				

\* Location of the instruments has been changed.

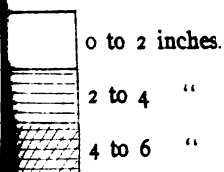
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Scale of Shades.





## FALL STATISTICS FOR SEPTEMBER, 1893.

## RAINFALL—(INCHES).

STATION.	County.	Average for the month of September.	Length of record, years.	Record begins.	Record ends.	Total for September, 1893.	Departure from the average.	EXTREMES OF MONTHLY PRECIPITATION FOR SEPTEMBER.			
								GREATEST		LEAST.	
								Amount.	Year.	Amount.	Year.
Western Plateau		3.72				3.41	-0.31				
Angelica	Allegany	2.94	8	1856	1893	2.67	-0.27	8.72	1890	0.90	1873
Humphrey	Cattaraugus	3.92	11	1883	1893	3.83	-0.09	9.00	1890	2.04	1891
Elmira	Chemung	4.30	14	1851	1893	3.72	-0.58	6.14	1890	0.63	1855
Eastern Plateau		3.19				3.84	+0.65				
Cooperstown	Otsego	3.33	40	1854	1893	4.03	+0.70	7.24	1890	1.29	1894
Port Jervis	Orange	3.06	9	1890	1893	1.93	-1.13	6.97	1882	1.15	1884
Waverly	Tioga	3.18	11	1882	1893	5.57	+2.39	8.24	1890	1.28	1882
Northern Plateau		2.80				2.82	+0.02				
Lowville	Lewis	2.80	25	1827	1893	2.82	+0.02				
Coast Region		3.63				2.14	-1.49				
New York city	New York	3.63	23	1871	1893	2.27	-1.36	7.43	1889	0.51	1884
Setauket	Suffolk	3.72	9	1885	1893	2.02	-1.70	7.22	1889	0.93	1885
Hudson Valley		3.42				3.70	+0.48				
Albany	Albany	3.71	20	1874	1893	3.26	-0.51	8.81	1790	1.80	1884
Honey-mead Brook	Dutchess	3.59	10	1884	1893	4.42	+0.83	7.89	1888	0.71	1885
West Point	Orange	3.16	45	1840	1893	2.84	-0.32	13.50	1882	0.90	1785
Boyd's Corners	Putnam	4.27	8	1856	1891			9.33	1868	1.44	1871
Rondout	Ulster	2.39	23	1830	1893	4.22	+1.83	6.20	1847	0.50	1846
Mohawk Valley		3.63									
Utica	Oneida	3.63	36	1826	1892			8.27	1890	1.38	1835
Champlain Valley		2.46				2.12	-0.74				
Plattsburgh Barracks	Clinton	2.86	34	1840	1893	2.12	-0.74	6.25	1840	0.51	1887
St. Lawrence Valley		3.29				2.66	-0.51				
Malone	Franklin	3.38	13	1830	1893	2.71	-0.67				
Madison Barracks	Jefferson	2.98	32	1840	1893	2.28	-0.70	6.51	1849	0.41	1844
North Hammond	St. Lawrence	3.63	13	1866	1892			10.44	1866	0.69	1871
Potsdam	"	3.16	23	1828	1893	3.00	-0.16	5.13	1846	0.47	1836
Great Lakes		3.01				2.28	-0.73				
Buffalo	Erie	3.25	23	1871	1893	2.71	-0.54	7.44	1878	1.07	1871
Rochester	Monroe	2.33	22	1871	1893	2.20	-0.13	5.69	1876	0.57	1871
Fort Niagara	Niagara	2.83	38	1842	1893	2.04	-0.79	7.25	1850	0.26	1844
Oswego	Oswego	2.79	23	1871	1893	2.81	+0.02	6.33	1890	0.76	1881
Palermo	"	2.98	40	1854	1893	2.80	-0.18	7.55	1890	1.04	1880
Erie, Pennsylvania	Erie	3.89	21	1873	1893	1.13	-2.76	8.45	1871	1.13	1893
Central Lakes		2.73				4.38	+1.65				
Geneva	Ontario	2.73	23	1841	1892			6.11	1890	0.09	1867
Ithaca	Tompkins	2.73	15	1879	1893	4.38	+1.65	6.62	1890	0.94	1879
Average departure							-0.21				

during the period covered by the record.

## Meteorological Summary for October, 1893.

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The average atmospheric pressure (reduced to sea-level and 32 degrees Fahr.) for the State of New York during October was 30.08 inches. The highest barometer was 30.57 inches, at Ithaca, on the nineteenth; and the lowest was 28.86 inches, at Ithaca, on the fourteenth. The mean pressure decreased from 30.13 at the eastern border of the State, to 30.05 in the vicinity of Lake Erie. The average of the mean pressures at six stations of the National Bureau was about 0.02 inches above the normal; the pressure being below the usual value in western New York, but much above it in the eastern section.

The mean temperature for the State was 51.0 degrees; the highest general daily mean, 59.9 degrees, occurring on the eleventh, and the lowest, 33.3 degrees, on the 30th. The highest local monthly mean was 57.6 degrees, at New York City; and the lowest was 47.3 degrees, at Number Four, Lewis county. The maximum temperature reported during the month was 86 degrees, at Humphrey, on the twelfth; and the minimum was 12 degrees, at Brookfield, on the thirty-first. The mean monthly range of temperature for the State was 51.0 degrees; the greatest range, 65.0 degrees, occurring at Humphrey, and the least, 39 degrees at Setauket. The mean daily range for the State was 19.0 degrees; the maximum value being 49 degrees, at Waverly, on the eleventh, and the minimum, 1.0 degree, at Plattsburgh Barracks, on the twenty-fourth. The mean temperatures for the various sections of the State were as follows: The Western plateau, 49.8 degrees; the Eastern plateau, 49.6 degrees; the Northern plateau, 48.2 degrees; the Coast region, 56.3 degrees; the Hudson valley, 51.8 degrees; the Mohawk valley, 51.2 degrees; the Champlain valley, 49.0 degrees; the St. Lawrence valley, 50.6 degrees; the Great Lake region, 52.0 degrees; and the Central

Lake region, 51.9 degrees. The average of the mean temperatures at twenty-two stations possessing records for previous years was 2.8 degrees above the normal; all stations reporting values above the normal.

The mean relative humidity was 76 per cent. The dew point was 44 degrees.

The average precipitation for the State was 2.41 inches of rain and melted snow. The heaviest general rainfall occurred in lower Hudson valley and Coast region, ranging from four to six inches; while near the St. Lawrence river and Lake Champlain the amount was less than one inch. The greatest local monthly precipitation was 6.07 inches at Bedford, and the least was 0.63 inches at Ogdensburg. Data upon heavy rainfall will be found in the table of meteorological data. The first heavy rains of the month occurred on the fourteenth, the average amount over the Western plateau on that date being 1.07 inches. The heaviest precipitation of the month along the coast occurred on the twenty-third, with an average of 1.80 inches for the region. The average amount at coast stations on the twenty-eighth was 1.38 inches. The average total rainfall at twenty-four stations possessing records for previous years was 0.72 inch below the normal. The only excesses occurred at four stations of the southeastern section, and at Humphrey. The average number of days on which the precipitation amounted to 0.01 inch or more was 7.1.

The average number of clear days for the State was 12.6; of partly cloudy days, 9.5; and of cloudy days, 8.9. The mean cloudiness for the State was 47 per cent.

The prevailing wind direction was from the southwest. The average wind travel at six stations of the National Bureau was 7,666 miles; being in excess of the usual value in all sections of the State. The maximum velocity recorded was 61 miles per hour at Buffalo on the fourteenth.

Thunderstorms were reported from Honeymead Brook on the fourteenth, and from South Canisteo and Ogdensburg on the twenty-fourth.

Hail fell at South Canistota on the fourteenth and twenty-eighth, and at Eden Centre on the twenty-second and twenty-eighth.

Solar halos were observed on the thirteenth and twenty-sixth, and lunar halos on the nineteenth, twentieth and twenty-second.

Light frosts occurred on the first, second and eleventh, and killing frosts on the seventeenth, twenty-sixth and thirtieth.

The data for this summary have been obtained from the records of forty-nine Voluntary Observers, six stations of the National Bureau, five Military Posts and sixteen Special Rain-fall Observers.

During October the weather of New York was influenced by seven areas of high and eight areas of low pressure; the latter number being the usual storm frequency for October of previous years. Six depressions, originating on the western side of the continent or over the Pacific ocean, passed eastward in the vicinity of the State on the fourth, seventh, ninth, twenty-fourth, twenty-seventh and twenty-eighth; their centers in all cases being well beyond the northern border of New York. Of this series, the disturbances of the seventh, twenty-fourth and twenty-eighth were the most energetic, causing gales along the lakes, with but moderate precipitation. The Atlantic States were also visited by the two West India cyclones during the month; the first, passing northward over western New York on the fourteenth, gave the lowest barometric reading recorded in this vicinity for many years, and was accompanied by a hurricane and heavy rains. The second tropical cyclone moved from the Gulf to the Middle Atlantic States, giving a large rainfall and high winds northward along the coast on the twenty-third; and thence passed eastward over the ocean on the following day.

During the first half of the month anticyclonic areas of slight or moderate intensity passed in the vicinity of New York between the first and fourth, seventh and eighth, and tenth and thirteenth. Fair weather was prevalent during this period, with temperatures considerably above the normal. A general and marked increase of pressure followed the severe storm of the fourteenth, and during the succeeding six days the barometer

ranged from 30.4 to 30.6 inches over New York. The depression of temperature accompanying this area was most marked on the sixteenth and seventeenth, when the first killing frost of the season occurred in many localities of central and eastern New York; in most cases being preceded by a light fall of snow. A high pressure area passing over the State about the twentieth, was of small intensity, and the weather grew warmer until the twenty-fourth, when the mean temperatures at all stations approached closely to the maximum for the month. The sixth and seventh anticyclones gave a decided fall of temperature on the twenty-sixth and twenty-ninth and thirtieth, with general frosts and a very light snowfall.

Corn cutting was nearly completed by the close of September, and potatoes were being rapidly secured, the crop being generally better than had been anticipated. The bean crop was gathered early in the month, and escaped damage from frost. The apple crop proved very light, the pear crop fair. Grapes were in most cases abundant and of excellent quality, and were secured without damage from frost.

The following are notes on the severe cyclone of the fourteenth: Friendship, unusually severe storm, considerable damage to buildings and trees; Humphrey, trees and fences blown down; Wedgewood, severest storm of the season, many buildings unroofed; Ithaca, many trees uprooted and buildings damaged; Binghamton, trees uprooted, buildings unroofed and other damage, amounting to several thousands of dollars; Turin, strong gale from south, buildings unroofed and other damage; Honey-mead Brook, gale from southeast, force 6 on scale of 10; Baldwinville, trees blown down and other damage.



## METEOROLOGICAL DATA

LOCATION OF STATIONS.			BAROMETER.					HUMIDITY.		TEMP.				
STATIONS.	County.	Elevation, feet.	Mean.	Highest.	Date.	Lowest.	Date.	Monthly range.	Mean relative.	Dew point (degrees).	Mean of tri-daily observations	Mean of maximum and minimum.	Highest.	
<i>Western Plateau.</i>														
Alfred Centre	Allegany	1924										49.8	86	
Angelica	Allegany	1340									47.2	47.3	80	
Friendship	Allegany	1550	30.09	30.51	18	29.03	14	1.48	73	40	47.1	48.4	78	
Humphrey	Cattaraugus	1950									50.2	50.4	86	
Arkwright	Chautauqua	1260										50.3	75	
Elmira	Chemung	663									53.5	53.5	78	
LeRoy	Genesee	888										50.1	78	
Mt. Morris	Livingston	625										50.6	80	
Lockport	Niagara	616										52.0	83	
Victor	Ontario	650												
Wedgewood	Schuyler	1350								48.6		51.2	80	
Addison	Steuben	1000								49.5		50.5	77	
South Canisteo	Steuben	1480								47.8		48.7	77	
Arcade	Wyoming	1557								47.8		48.5	77	
Varysburg	Wyoming													
Italy Hill	Yates	1650												
<i>Eastern Plateau.</i>														
Binghamton	Broome	870										49.6	80	
Oxford	Chenango	1250									50.4	50.9	78	
Cortland	Cortland	1120										49.1	69	
South Kortright	Delaware	1700										47.4	73	
Brookfield	Madison	1350									46.7	47.6	73	
Middletown	Orange	680							77	46	52.2	52.2	78	
Port Jervis	Orange	470										51.8	77	
Cooperstown	Otsego	1300									48.0	48.2	73	
New Lisbon	Otsego	1234										48.6	76	
Perry City	Schuyler	1038									48.0	48.4	74	
Waverly	Tioga	825									50.8	51.6	80	
Minnewaska	Ulster	1800									49.2	49.5	70	
<i>Northern Plateau.</i>														
Lyon Mountain	Clinton	1917											48.2	78
Keene Valley	Essex													
Amersand	Franklin	1600												
Gloversville	Fulton	802									47.9	49.0	76	
Blue Mt. Lake	Hamilton													
Constableville	Lewis	1246												
Lowville	Lewis	900										49.0	78	
Number Four	Lewis	1571	30.09	30.46	19	29.04	14	1.42	74	39	47.1	47.3	74	
Turin	Lewis	1240										47.5	73	
<i>Coast Region.</i>														
New York City	New York	164	30.12	30.55	19	29.28	14	1.27	75	48		56.3	78	
Willet's Point	Queens											57.6	78	
Brentwood	Suffolk	75										55.3	78	
Setauket		40							76	48	55.3	55.9	74	
<i>Hudson Valley.</i>														
Albany	Albany	85	30.13	30.57	19	29.18	14	1.39	79	45		51.8	80	
Lebanon Springs	Columbia	880										54.0	75	
												48.5	73	

## STATE METEOROLOGICAL BUREAU.

217

FOR OCTOBER, 1893.

TEMPERATURE—(IN DEGREES FAHR.).						SKY.			PRECIPITATION—(INCHES).						WIND.			
Date.	Lowest.	Date.	Monthly range.	Mean daily range.	Greatest daily range.	Date.	Least daily range.	Date.	Number of clear days	No. of partly cloudy days	Number of cloudy days.	Number of days on which 0.01 or more inches fell.	Total	Greatest rainfall.	Duration. †	Date.	Total snow fall	Prevailing direction.
12 a	18 31	56	21	45	11	3	p	13.1	8.4	9.5	9.1	3.04	2.00	H. 6 M. 00	13-14	.....	.....	
12 a	24 30	56	20	38	11	5	15	12	9	10	3	3.30	1.20	.....	28	4.0	S. W.	
12 a	18 31	61	22	44	11	7	29	12	9	10	8	2.49	.....	.....	.....	2.5	S. W.	
12 a	19 31	59	26	45	11	7	15	13	9	9	11	3.07	0.84	.....	14	2.4	S. W.	
12	21 31	65	23	44	2	9	q	9	11	11	11	4.27	1.06	14	00	13	8.3	S. W.
12	30 31	45	12	21	j	3	30	19	3	9	7	2.66	1.25	.....	14	T.	S. E.	
12	26 31	52	18	34	11	3	4	8	17	6	8	2.35	1.35	.....	14	T.	S. E.	
12 b	21 31	59	25	43	11	11	4	11	10	10	6	1.88	0.92	.....	14	.....	S.	
12 b	28 31	55	20	38	3	6	15	11	12	8	7	2.68	1.05	.....	14	.....	S. W.	
12 c	18 31	62	23	39	11	5	23	14	9	8	9	2.57	0.91	.....	14	T.	S. W.	
12 c	22 31	54	22	43	11	7	4	18	6	7	10	2.89	1.77	16	20	13-14	T.	S. W.
12	18 31	59	23	41	i	7	15	15	3	13	12	4.05	2.04	6	00	13-14	1.9	N. W.
12	24 31	53	21	38	e	9	29	15	4	12	11	3.77	0.95	.....	15	1.8	.....	
12 d	12 31	54	21	49	11	2	4	14.0	7.7	9.3	7.8	2.41	2.25	.....	14	.....	.....	
12 d	17 31	59	24	44	10	3	15	11	8	12	8	1.68	0.62	14	00	11-12	T.	S. E.
12	20 31	55	24	39	12	10	r	.....	.....	.....	7	1.46	0.48	.....	28	T.	.....	
12	24 31	45	16	25	11	2	4	.....	.....	.....	9	3.73	2.25	.....	14	.....	.....	
12	15 31	58	25	42	a	9	29	.....	.....	.....	4	2.05	1.03	.....	27	.....	W.	
12	12 31	61	24	40	17	8	s	15	9	7	6	0.75	0.28	13	00	27	1.0	N. W.
12	26 31	52	18	30	9	3	23	15	9	7	7	3.10	1.04	.....	23	.....	W.	
12	30 31	57	19	34	9	7	23	15	8	8	8	3.67	1.27	.....	23	.....	W.	
12	30 31	52	20	33	12	5	29	13	7	11	9	1.27	0.48	.....	27	T.	S.	
12	16 31	60	25	44	11	7	16	.....	.....	.....	10	1.25	0.31	.....	28	.....	S. W.	
12	19 31	43	20	38	11	5	4	15	5	11	10	2.74	1.50	14	00	13-14	T.	N. W.
12 g	18 31	62	26	49	11	2	4	.....	.....	.....	8	2.34	1.17	24	00	13-14	T.	N. W.
12 g	28 31	42	14	35	24	6	4	.....	.....	.....	7	4.90	2.00	.....	23-24	.....	.....	
12	20 g	54	21	41	a	6	t	10.3	7.5	13.2	9.0	1.96	0.56	.....	27	.....	.....	
12	20 31	56	24	37	k	8	29	10	6	15	9	1.62	0.42	14	00	27	0.5	W.
12 e	20 30	58	22	41	a	6	16	10	11	10	8	1.69	0.53	.....	29	3.0	S.	
12 e	21 30	53	20	35	11	6	27	10	6	15	5	2.55	.....	.....	27	8.0	S.	
12	25 30	48	19	35	11	7	30	11	7	13	14	1.97	0.56	.....	27	2.1	S.	
12	34 31	42	15	29	13	5	4	14.5	10.0	6.5	7	4.54	2.54	.....	23	.....	.....	
12	34 31	44	14	28	17	5	4	17	7	7	8	5.28	2.54	.....	23	.....	N. W.	
12	34 31	44	17	28	13	7	u	.....	.....	.....	7	4.35	1.45	16	00	23	.....	W.
12	35 31	39	13	21	9	6	v	12	13	6	6	4.00	1.53	.....	23	.....	E.	
12	19 31	50	20	41	12	4	23	11.8	11.7	7.5	5.8	2.96	1.71	17	40	13-14	.....	.....
12	28 31	47	17	34	12	5	4	12	9	10	7	1.67	0.57	.....	28	.....	S.	
12	18 31	55	23	35	12	8	16	10	7	14	6	2.79	1.01	.....	14	T.	W.	

## METEOROLOGICAL DATA

LOCATION OF STATIONS.			BAROMETER.					HUMIDITY		TEM			
STATIONS.	County.	Elevation, feet	Mean.	Highest.	Date.	Lowest.	Date.	Monthly range.	Mean relative.	Dew point (degrees).	Mean of tri-daily obser- vations.	Mean of maximum and minimum.	Highest.
Honeymead Brook ....	Dutchess .....	450									51.1	51.4	73
Poughkeepsie .....	" .....	180										52.3	80
Wappinger's Falls .....	" .....	.....										52.9	78
West Point .....	Orange .....	187											
Boyd's Corners .....	Putnam .....	546											
Carmel .....	" .....	500											
Stillwater .....	Saratoga .....	.....									50.6	52.0	72
Rondout .....	Ulster .....	150											
Mohawk Valley .....	" .....	.....										51.2	77
Rome .....	Oneida .....	445										51.2	77
Utica .....	" .....	537											
Champlain Valley .....	" .....	.....										49.0	70
Plattsburgh Barracks.	Clinton .....	125										49.0	70
Port Henry .....	Essex .....	.....											
Glens Falls .....	Warren .....	840											
Whitehall .....	Washington .....	.....											
St. Lawrence Valley ..	" .....	.....										50.6	88
Malone .....	Franklin .....	810									49.1	49.7	74
Madison Barracks .....	Jefferson .....	266										51.2	88
Watertown .....	" .....	486											
Canton .....	St. Lawrence ..	304											
North Hammond .....	" .....	300											
Ogdensburg .....	" .....	258									50.4	51.7	81
Potsdam .....	" .....	300									49.6	49.6	...
Great Lakes .....	" .....	.....										52.0	86
Dunkirk .....	Chautauqua .....	590										51.3	73
Buffalo .....	Erie .....	690	30.05	30.49	18	28.90	14	1.59	72	43		54.0	71
Eden Centre .....	" .....	690										49.1	86
Brockport .....	Monroe .....	520										52.6	...
Rochester .....	" .....	621	30.09	30.51	17	28.92	14	1.59	80	44		53.0	84
Fort Niagara .....	Niagara .....	263										54.1	80
Heess Road Station ....	Niagara .....	330							81	45		50.4	73
Baldwinsville .....	Onondaga .....	390									51.1	51.0	75
Albion .....	Orleans .....	521											
Oswego .....	Oswego .....	304	30.06	30.47	18	28.93	14	1.54	75	43		52.0	78
Palermo .....	" .....	460							73	48	50.7	50.3	75
Lyons .....	Wayne .....	407									51.8	51.9	73
Erie, Pa .....	Erie .....	681	30.05	30.50	17	29.05	14	1.45	70	42		54.0	84
Central Lakes .....	Ontario .....	1000										51.9	79
Fleming .....	Cayuga .....	459									52.3	52.3	79
Geneva .....	" .....	.....									51.4	52.6	73
Watkins .....	Schuyler .....	737											
Romulus .....	Seneca .....	719							82	48		51.7	77
Ithaca .....	Tompkins .....	793	30.06	30.50	17	28.86	14	1.64			50.6	51.0	76
Mean .....	.....	.....	30.06	30.57	19	28.86	14	1.50	76	44		51.0	86

\* Mean of the tri-daily observations. † Mean of the maximum and minimum by the  
from the tri-daily observations are derived by the formula (7 a. m. + 2 p. m. + 9 p. m. + 9 p.  
within twenty-four hours. § Means for twenty-one days.

(a) 11, 12; (b) 3, 12; (c) 9, 12; (d) 9, 11; (e) 12, 13; (f) 9, 13; (g) 30, 31; (h) 29, 31; (i) 2, 11;  
(u) 22, 30; (v) 16, 28; (w) 4, 28; (x) 15, 16, 25; (y) 15, 25; (z) 16, 25; (aa) 7, 30; (ab) 4, 6.

FOR OCTOBER, 1898 — (Concluded).

TEMPERATURE—(IN DEGREES FAHR.).										SKY.		PRECIPITATION—(INCHES).					WIND.	
Date.	Lowest	Date	Monthly range.	Mean daily range.	Greatest daily range.	Da's.	Least daily range.	Date.	Number of clear days.	No. of partly cloudy days.	Number of cloudy days.	Number of days on which 0.01 or more inches fell.	Total.	Greatest rainfall.	Duration †	Date.	Total snow fall.	Prevailing direction.
9 21 31	52	19 31	52	19 30	12 8	w	14	10	7	6	3.73	1.71	17 40	13-14	T.	S. W.		
9 19 31	61	25 41	56	20 31	12 10	4	23 15	12 4	5	2.75	0.84	...	...	...	...	...	S. W.	
9 22 31	56	20 31	56	20 31	12 10	4	23 15	12 4	5	3.52	1.44	15 00	13-14	T.	S. W.			
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
9 23 31	49	19 38	12 5	29 7	18 6	5	...	...	...	...	...	...	...	...	...	...	...	
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
10 21 31	56	18 27	m	5 24	...	...	...	...	...	...	...	...	...	...	...	...	...	
10 21 31	56	18 27	m	5 24	...	...	...	...	...	...	...	...	...	...	...	...	...	
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
10 22 31	48	16 80	12 1	24	...	...	...	...	...	...	...	...	...	...	...	...	...	
10 22 31	48	16 80	12 1	24	...	...	...	...	...	...	...	...	...	...	...	...	...	
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
10 23 31	58	21 45	8 7	2 14.0	9 8	7.7	...	...	...	...	...	...	...	...	...	...	...	
10 23 31	51	18 20	11 7	16 16	5 10	...	...	...	...	...	...	...	...	...	...	...	...	
10 29 30	54	2 45	8 7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
10 25 31	56	23 37	15 15	11 11	5 5	...	...	...	...	...	...	...	...	...	...	...	...	
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
10 25 31	49	18 47	2 3	18.0	8.1	9.9	...	...	...	...	...	...	...	...	...	...	...	
10 31 31	42	14 22	2 3	30 11	8 12	...	...	...	...	...	...	...	...	...	...	...	...	
10 31 30	40	16 30	11 3	8 14	9 9	...	...	...	...	...	...	...	...	...	...	...	...	
10 29 30	57	24 47	2 5	31 19	8 9	...	...	...	...	...	...	...	...	...	...	...	...	
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
10 28 31	56	18 38	11 6	14 11	9 11	...	...	...	...	...	...	...	...	...	...	...	...	
10 28 31	47	15 30	12 5	27	...	...	...	...	...	...	...	...	...	...	...	...	...	
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
10 29 30	48	16 27	20 7	18 10	13 8	...	...	...	...	...	...	...	...	...	...	...	...	
10 26 30	49	19 31	11 7	15 19	2 10	...	...	...	...	...	...	...	...	...	...	...	...	
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
10 26 31	52	15 33	11 4	4 12	6 13	...	...	...	...	...	...	...	...	...	...	...	...	
10 25 31	50	22 44	17 9	29 15	11 5	...	...	...	...	...	...	...	...	...	...	...	...	
10 28 31	47	16 28	3 5	15 15	5 11	...	...	...	...	...	...	...	...	...	...	...	...	
10 30 31	54	16 28	3 5	27 12	7 12	...	...	...	...	...	...	...	...	...	...	...	...	
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
10 31 31	52	20 39	11 5	4 10.8	13.0	7.7	...	...	...	...	...	...	...	...	...	...	...	
10 28 31	51	19 35	11 9	25 4	24 3	...	...	...	...	...	...	...	...	...	...	...	...	
10 26 31	52	21 39	11 5	4	...	...	...	...	...	...	...	...	...	...	...	...	...	
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
10 26 31	51	20 33	11 9	15	6 10	...	...	...	...	...	...	...	...	...	...	...	...	
10 21 31	55	19 39	11 9	29 12	9 10	...	...	...	...	...	...	...	...	...	...	...	...	
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
10 12 31	51	19 49	11 1	24 12.6	9.5	8.9	...	...	...	...	...	...	...	...	...	...	...	

Draper thermograph. † Report received too late to be used in computing means. The means m.) + 4. † Blank indicates that the duration is not shown in the original records, but is

(j) 4, 24; (k) 1, 11; (m) 10, 18; (n) 11, 15; (p) 4, 20; (q) 4, 15; (r) 4, 15, 20; (s) 16, 20; (t) 16, 27;

## DAILY AND MONTHLY MEAN TEM

STATION.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<i>Western Plateau...</i>	46	49	58	57	56	56	54	54	60	50	58	63	57	51
<i>Alfred Centre.....</i>	44	49	59	54	55	54	52	58	58	50	61	61	56	52
<i>Angelica.....</i>	46	45	55	54	55	58	50	50	60	48	54	60	55	48
<i>Friendship.....</i>	42	46	54	55	54	51	52	51	58	48	56	59	53	52
<i>Humphrey.....</i>	48	54	55	56	55	55	54	60	59	56	68	69	56	45
<i>Arkwright †.....</i>	49	52	64	56	53	57	52	56	55	52	64	68	58	48
<i>Elmira.....</i>	48	53	62	62	61	59	58	58	63	52	58	62	62	58
<i>LeRoy.....</i>	45	48	58	58	53	55	54	54	60	45	55	65	60	50
<i>Mount Morris.....</i>	44	46	55	60	52	54	54	54	60	48	56	62	58	54
<i>Lockport.....</i>	49	54	64	58	60	60	60	56	62	52	57	66	60	53
<i>Victor.....</i>	48	54	61	56	58	54	56	55	62	54	58	66	64	62
<i>Wedgewood †.....</i>	47	50	56	60	58	52	56	51	62	51	64	58	54	56
<i>Addison.....</i>	44	46	55	56	57	52	52	52	62	50	56	60	54	54
<i>South Canisteo.....</i>	44	47	56	55	53	56	51	58	55	48	59	64	58	52
<i>Arcade.....</i>	44	46	55	56	57	52	52	52	62	50	56	60	54	54
<i>Varysburgh.....</i>	44	47	56	55	53	56	51	58	55	48	59	64	58	52
<i>Italy Hill.....</i>	44	47	56	55	53	56	51	58	55	48	59	64	58	52
<i>Eastern Plateau...</i>	46	52	55	56	57	53	56	53	59	51	52	56	56	57
<i>Binghamton.....</i>	46	58	58	58	60	52	58	54	60	53	58	54	60	56
<i>Oxford.....</i>	46	52	54	57	58	51	56	52	56	48	50	56	54	56
<i>Oortland †.....</i>	46	51	54	57	56	56	56	54	60	50	50	58	59	58
<i>South Kortright....</i>	41	48	52	56	54	52	55	49	52	46	48	52	54	57
<i>Brookfield.....</i>	47	50	57	52	53	50	50	50	55	54	54	56	55	50
<i>Middletown.....</i>	53	59	58	54	62	54	62	56	63	56	52	58	56	62
<i>Port Jervis.....</i>	50	57	54	61	58	62	59	58	60	55	51	55	57	57
<i>Cooperstown.....</i>	43	51	52	55	55	52	54	50	58	47	48	55	53	58
<i>New Lisbon.....</i>	42	50	54	52	57	50	54	50	56	46	51	55	56	59
<i>Perry City.....</i>	43	46	54	58	54	51	53	50	61	49	51	60	55	53
<i>Waverly.....</i>	50	58	58	57	63	54	60	57	62	54	55	58	55	57
<i>Minnewaska.....</i>	50	54	56	52	56	54	58	56	62	51	50	57	56	56
<i>Northern Plateau..</i>	45	51	55	54	56	53	56	52	58	46	50	57	58	59
<i>Lyon Mountain †...</i>	45	51	55	54	56	53	56	52	58	46	50	57	58	59
<i>Ampersand.....</i>	45	51	55	54	56	53	56	52	58	46	50	57	58	59
<i>Gloversville.....</i>	50	54	55	54	57	55	57	52	56	51	50	56	55	61
<i>Constableville....</i>	44	51	55	58	56	52	56	52	58	46	50	58	60	60
<i>Lowville.....</i>	43	51	56	50	54	53	53	52	54	42	50	58	58	58
<i>Number Four.....</i>	44	54	55	54	57	55	57	52	56	51	50	56	55	57
<i>Turin.....</i>	44	54	55	54	57	55	57	52	56	51	50	56	55	57
<i>Coast Region.....</i>	56	58	62	57	62	60	64	62	65	59	59	59	61	64
<i>New York City.....</i>	56	61	64	56	64	62	66	62	66	61	69	62	63	68
<i>Willet's Point.....</i>	57	52	62	60	60	59	62	65	64	56	58	58	58	60
<i>Brentwood.....</i>	56	60	60	56	61	58	65	60	64	60	58	56	61	64
<i>Setauket.....</i>	56	60	60	56	61	58	65	60	64	60	58	56	61	64
<i>Hudson Valley.....</i>	49	55	56	56	60	56	63	56	62	54	52	55	57	63
<i>Albany.....</i>	52	58	58	58	63	58	65	56	64	55	54	57	59	66
<i>Lebanon Springs....</i>	44	53	52	54	56	56	62	52	57	48	48	52	53	57
<i>Honeynead Brook..</i>	50	56	55	56	58	54	60	54	61	52	50	54	56	62
<i>Poughkeepsie.....</i>	50	54	56	53	58	53	64	56	60	54	50	54	56	64
<i>Wappinger's Falls..</i>	50	55	56	54	60	56	64	56	63	58	52	54	56	64
<i>West Point.....</i>	52	58	60	65	62	61	64	65	72	64	58	62	62	62
<i>Boyd's Corners.....</i>	48	54	54	55	62	56	63	54	58	50	50	54	54	66
<i>Stillwater.....</i>	48	54	54	55	62	56	63	54	58	50	50	54	54	66
<i>Rondout.....</i>	48	54	54	55	62	56	63	54	58	50	50	54	54	66
<i>Peekskill.....</i>	48	54	54	55	62	56	63	54	58	50	50	54	54	66
<i>Mohawk Valley....</i>	46	48	61	64	54	56	62	53	37	53	48	58	63	63
<i>Rome.....</i>	46	48	61	64	54	56	62	53	37	53	48	58	63	63
<i>Utica.....</i>	46	48	61	64	54	56	62	53	37	53	48	58	63	63
<i>Champlain Valley..</i>	51	54	52	54	60	55	57	54	60	48	48	58	57	58
<i>Plattsburgh Barracks</i>	51	54	52	54	60	55	57	54	60	48	48	58	57	58
<i>Glens Falls.....</i>	51	54	52	54	60	55	57	54	60	48	48	58	57	58

## TEMPERATURES FOR OCTOBER, 1893.

15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Monthly mean.
41	40	45	47	50	52	53	56	57	61	45	42	48	41	35	32	34	49.8
37	38	46	50	48	48	53	53	58	58	45	38	47	38	30	27	...	47.3
43	38	41	46	51	51	56	52	58	61	42	41	46	40	34	31	30	48.4
40	34	44	46	47	49	54	53	53	61	45	40	48	40	34	31	32	47.9
37	39	45	51	50	52	55	54	57	60	48	39	45	38	33	32	32	50.4
40	39	46	48	54	53	51	60	58	74	42	44	45	38	34	32	36	50.3
46	43	47	50	53	53	58	63	63	66	48	49	53	46	38	35	38	53.5
42	39	45	46	52	51	54	56	58	62	43	43	51	42	35	35	36	50.1
...	40	44	44	51	54	54	54	54	...	...	...	49	44	37	34	...	50.6
42	43	48	46	50	53	54	56	58	61	47	42	48	42	37	34	38	52.0
40	40	47	53	48	52	56	56	56	63	46	40	49	44	34	30	34	51.2
45	40	46	47	48	52	55	56	57	63	46	42	52	45	38	34	34	50.5
42	39	44	46	46	51	54	52	53	60	46	39	50	42	36	30	30	48.7
39	39	42	46	50	51	51	53	58	60	42	42	46	39	32	30	33	48.5
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
46	38	42	45	46	50	53	54	56	61	49	42	52	47	37	32	30	49.6
50	39	42	46	45	52	56	54	56	63	50	42	54	46	38	30	31	50.9
45	38	42	42	44	51	55	54	55	62	50	41	52	46	37	32	32	49.3
45	37	40	42	44	48	52	51	56	60	46	40	50	44	36	34	32	49.1
44	38	38	41	44	48	56	52	56	60	46	42	50	46	34	29	26	47.4
45	36	40	44	44	48	50	52	51	59	46	40	53	45	34	32	26	47.6
49	42	50	50	48	49	56	56	60	64	52	48	55	51	42	38	34	53.2
50	42	47	47	47	52	55	55	60	63	50	42	56	50	42	33	32	51.8
44	38	41	44	45	49	52	58	55	57	46	41	52	46	34	31	29	48.2
45	36	40	44	44	48	52	53	55	62	58	44	52	46	38	32	29	48.6
43	36	42	43	46	53	52	53	55	62	43	41	51	44	36	32	31	48.4
46	38	46	48	50	52	54	56	60	63	49	43	53	47	38	33	30	51.6
45	40	42	49	46	46	51	56	56	52	49	40	45	53	34	33	30	49.5
44	36	41	46	46	47	51	52	55	61	47	39	49	45	34	28	31	48.2
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
45	38	42	46	44	46	50	53	53	62	46	40	48	47	36	30	31	49.0
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
46	37	41	46	46	48	52	52	54	62	50	37	50	45	36	28	32	49.0
41	33	40	45	46	48	50	52	56	59	46	38	48	44	32	28	30	47.3
43	35	41	46	47	47	...	52	56	60	46	40	49	43	34	28	32	47.5
54	47	51	56	50	52	57	62	60	62	55	50	59	54	45	41	39	56.3
53	47	53	58	53	56	59	62	60	66	57	49	62	55	44	41	41	57.6
55	45	52	58	48	51	57	61	66	59	53	53	58	50	44	40	38	55.3
54	48	50	53	50	50	56	63	61	62	55	50	58	56	48	42	39	55.9
53	44	44	48	48	49	54	56	57	64	51	44	54	52	42	35	32	51.8
52	44	47	49	48	50	56	57	58	64	49	46	56	52	43	36	36	54.0
42	40	40	45	46	49	54	56	50	62	54	38	46	50	38	30	29	48.5
49	42	42	48	48	50	52	55	59	63	48	44	56	50	42	36	31	51.4
54	48	43	47	46	50	55	56	62	65	52	44	55	54	46	36	32	52.3
54	48	43	47	49	50	54	58	59	63	48	45	58	54	43	38	32	52.2
56	45	50	54	49	47	...	...	...	...	...	...	...	...	...	...	...	...
54	49	44	48	48	48	52	55	56	64	56	46	54	52	42	35	32	52.0
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
57	43	35	47	48	52	51	54	60	60	57	38	46	49	44	30	31	51.2
57	43	35	47	48	52	51	54	60	60	57	38	46	49	44	30	31	51.2
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
49	42	43	43	39	44	49	47	50	56	52	44	46	50	40	33	33	49.0
49	42	43	43	39	44	49	47	50	56	52	44	46	50	40	33	32	49.0

## DAILY AND MONTHLY MEAN TEM

STATIONS.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<i>St. Lawrence Valley</i>	48	52	56	56	56	59	58	57	56	49	53	61	64	61
<i>Malone</i> .....	46	52	53	60	56	58	58	55	57	42	48	60	64	62
<i>Madison Barracks</i> ..	48	50	60	52	58	56	58	58	56	53	55	62	66	63
<i>Watertown</i> .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
<i>Canton</i> .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
<i>North Hammond</i> ..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
<i>Ogdensburg</i> .....	53	60	60	56	57	61	66	59	56	49	56	62	62	62
<i>Potsdam*</i> .....	48	48	53	58	54	60	55	55	56	54	49	60	64	58
<i>Great Lakes</i> .....	50	52	62	58	57	59	57	58	60	51	57	64	61	53
<i>Dunkirk</i> .....	50	50	60	58	54	58	56	58	58	52	61	65	61	50
<i>Buffalo</i> .....	50	54	64	60	60	62	58	58	62	54	63	71	62	50
<i>Eden Centre</i> .....	54	51	76	58	57	57	54	56	54	48	51	52	47	47
<i>Brockport</i> .....	.....	.....	64	61	59	58	58	62	56	59	.....	.....	.....	.....
<i>Rochester</i> .....	47	50	62	59	59	60	54	58	62	50	60	70	64	54
<i>Fort Niagara</i> .....	52	54	59	62	60	64	62	62	62	54	54	65	64	58
<i>Hess Road Station</i> ..	47	48	55	60	54	60	55	56	62	48	52	60	59	50
<i>Baldwinsville</i> .....	50	54	60	55	58	58	50	60	56	48	54	58	62	52
<i>Albion</i> .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
<i>Oswego</i> .....	51	54	60	58	55	59	58	56	61	48	56	64	62	61
<i>Palermo</i> .....	42	49	55	50	58	53	60	52	57	46	51	61	63	59
<i>Lyons</i> .....	48	51	63	60	58	57	55	56	60	50	54	64	62	55
<i>Erie, Pennsylvania</i> ..	54	52	66	58	56	64	60	59	67	53	65	72	64	52
<i>Central Lakes</i> .....	47	52	59	60	57	56	56	56	62	50	55	64	60	58
<i>Fleming</i> .....	45	49	62	59	57	60	57	58	63	49	57	61	64	58
<i>Geneva</i> .....	48	54	57	60	58	54	58	56	63	52	56	66	60	58
<i>Watkins</i> .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
<i>Romulus</i> .....	50	53	60	60	56	57	54	56	59	50	54	63	59	58
<i>Ithaca</i> .....	46	51	58	59	58	54	57	54	64	50	54	64	59	58
Monthly means	48.4	52.8	57.6	57.2	57.5	56.4	58.3	55.5	59.9	51.1	53.1	59.0	59.4	58.7

\* Means of tri-daily observations. † Mean of the maximum and minimum by the Draper and minimum of the ordinary self-registering thermometers. The means from the tri daily received too late to be used in computing averages.

## TEMPERATURES FOR OCTOBER, 1893 — (Concluded).

15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Monthly mean.
46	30	46	43	44	52	54	56	60	61	46	42	48	44	37	31	35	50.6
48	35	44	43	42	52	54	55	61	62	51	38	49	44	36	28	32	49.7
46	42	46	46	47	50	56	56	58	62	48	42	44	48	39	34	40	51.2
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
46	40	46	43	45	54	53	55	60	58	43	44	48	43	38	33	35	51.7
42	37	47	39	41	51	55	58	63	62	41	45	51	42	34	30	33	49.6
43	42	48	47	50	54	55	55	59	60	47	46	50	44	39	36	38	52.0
44	42	46	48	48	56	54	53	58	58	44	46	48	44	38	34	39	51.3
42	44	51	52	52	56	57	59	62	62	46	44	52	43	38	34	40	54.0
41	44	40	45	49	47	52	49	57	48	41	47	47	41	37	33	41	49.1
41	42	49	47	51	.....	58	58	.....	66	48	.....	52	43	37	35	.....	52.6
44	42	48	44	54	58	57	58	58	64	45	46	50	44	38	36	38	53.0
46	46	54	50	48	54	58	52	58	54	53	52	50	47	44	38	42	54.1
44	44	47	46	44	50	52	50	58	63	50	44	50	42	40	36	38	50.4
42	38	47	48	50	54	54	59	58	.....	.....	.....	.....	40	35	42	36	51.0
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
44	40	46	47	52	54	54	58	60	64	44	44	50	46	40	34	36	52.0
47	38	48	45	51	51	52	53	57	63	53	39	50	46	37	37	33	50.2
44	40	46	46	50	54	55	56	58	64	50	44	51	46	38	37	36	51.9
46	43	48	48	52	58	56	57	60	62	46	48	48	46	40	34	40	54.0
48	38	47	47	49	54	56	57	57	64	50	43	49	48	37	35	35	51.9
52	36	45	48	52	54	57	63	56	64	51	43	45	45	39	36	34	52.3
46	40	56	46	49	55	56	54	54	65	48	44	50	56	39	36	38	52.6
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
46	40	46	49	50	54	55	56	58	64	50	43	50	44	36	39	36	51.7
46	36	42	46	44	52	58	56	60	65	51	41	51	46	36	33	32	51.0
48.0	41.2	44.2	46.9	47.0	50.6	53.3	54.8	57.1	60.6	49.9	43.0	50.1	47.4	39.0	38.3	33.7	51.0

thermograph. Means for all stations not otherwise indicated are derived from the maximum observations are derived by the formula (7 a. m. + 2 p. m. + 9 p. m. + 9 p. m.) + 4. | Reports



## DAILY AND MONTHLY PRECIPITA

STATIONS.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<i>Western Plateau.</i>	0.00	0.00	0.01	0.34	T.	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.46	1.07
Alfred Centre			.30			.34							*	*
Angelica				.34									*	*
Bolivar				.38									.18	1.07
Friendship				.27			T.						.50	.84
Humphrey				.54			.03						1.06	.36
Little Valley														
Cherry Creek				.73	.05	T.							.22	1.47
Elmira													.61	1.25
Akron														
LeRoy				.38										1.35
Avon														
Mt. Morris				.32										.92
Lockport				.67			.16						.06	1.06
Victor														
Wedgewood				.28			.10						.37	.91
Addison				.24			.09						.54	1.23
Atlanta				.26	T.								.63	1.61
Pine City				.20		.01								1.49
South Canisteo				.35		.15							2.25	.35
Arcade				.47		.02	.04						.67	.85
Attica														
Castile														
Varysburg														
<i>Eastern Plateau.</i>	0.00	0.00	0.00	0.16	T.	0.04	0.14	0.00	0.00	0.00	0.00	0.04	0.04	0.77
Binghamton				.33	.02							.62		
Chenango Forks														
Oxford				.23			.15							.30
Cortland				.28										2.25
Bovina Centre							.41							.56
Deposit						.25								
South Kortright														
Brookfield				.25										
Apulia														
Middletown				.01			.34							1.01
Port Jervis						.30								1.22
Warwick				.05			.35							1.08
Cooperstown				.01		.15								.18
New Lisbon				.09			.68							.20
Perry City				.25			.09						.30	1.20
Newark Valley				.30			.01							1.50
Waverly				.30									.22	.25
Ellis				.30									.15	.83
Minnewaska				.10			.70							1.10
<i>Northern Plateau.</i>	0.00	0.00	0.00	0.06	0.01	0.01	0.22	T.	0.04	0.60	0.00	0.00	T.	0.21
West Chazy				T.	.03		.31	T.	.27					.41
Ausable Forks														
Keene Valley														
Ampersand														
Gloversville				T.	.02		.27		T.				T.	.30
Constableville														
Lowville				.01			.08							.11
Number Four				.21		.10							T.	*
Turin				.10	.01		.18							*
Boonville				.11			.36							
Galway														
King's Station							.35							.25
<i>Coast Region.</i>	0.00	0.00	0.00	0.01	T.	0.10	0.27	0.00	0.00	0.00	0.00	0.00	0.17	0.83
New York city				.02	T.		.22						.09	.64
Willet's Point				.02		.40							.60	
Brentwood														
Setauket				T.		T.	.38						T.	1.00
Bedford				T.			.47							1.07

## STATE METEOROLOGICAL BUREAU.

225

TION FOR OCTOBER, 1893 — (INCHES).

15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total.
0.40	0.08	0.00	0.00	0.00	0.00	T.	T.	0.06	0.03	T.	0.05	0.31	0.25	0.08	0.03	T.	8.13
* 11.66												1.30					8.30
11.30	T.							.15	T.			.35	.10	.85	T.		2.49
.17	.05							.06	.44			.44	.10	.18			2.58
.33	.05							.02	.10		T.	.47	.25	.18	.06		3.07
.74	.05										.72	.10	.37	.15	.15		4.27
1.33	.11								T.		.04	.58	.16	.31	.15		5.75
.13								.16	.03			.06	.42	T.			2.66
.33									.01		T.	.17	.06		T.		2.35
.23								.06				.20	.05				1.88
.23								T.			T.	.35	.14				2.68
.04																	
.06	.04					T.		.13	.03			.50	.22	T.			2.57
.05								.10	.08	T.		.34	.20	T.			2.89
.05							.01	.02	.03			.38	.09			.02	2.80
.06								.16	T.			.11	.50				2.95
T.	.06					T.		.18	.11			.50	.15	.06	T.		4.05
.35	.05								T.		.10	.39	.06	.15	T.		3.77
0.09	0.02	0.00	0.00	T.	0.00	0.08	0.00	0.29	0.07	0.00	0.00	0.33	0.31	0.03	T.	T.	2.54
	.06					T.		.09				.13	.38	.13			1.68
.12	.08					.10		T.					.48	T.		T.	1.46
.19	.06							.08				.38	.49	.05		.04	3.73
.70						.20		.14	.90			.22	.89				4.04
								.65				1.03		.12			3.05
.02	.05											.28	.10	.05	T.		0.75
								1.04				.63					3.10
		.05						1.27	.08			.50	.25	.05			3.67
								.45				.32	.62				2.87
.16						.04		.07				.48	.10	.08			1.27
.03	.02					.05		.23	.01			.23	.31				1.25
.13	.05					.08		.07				.48	.14				2.74
	.02							.10				.44	.31				2.68
.05	.02							.10				* .27	+ .70	T.			2.34
.13								.04				.27	.39	.04			2.15
								* +2.00					* +1.00				4.90
0.14	0.00	0.00	0.00	0.00	0.00	T.	0.00	0.11	0.10	0.00	T.	0.40	0.35	0.24	T.	0.00	1.94
T.						T.		T.	.06			.05	.44	T.			1.57
.05								.14	.14			.42	.17	.11	T.		1.63
.33								.02				.33	.23	.53			1.69
+ .50								.14				.80	.80				3.55
+ .46						.02		.06	.11			.56	.26	.19	.01		1.97
.25								.12	.13			.60	.55	.06			2.18
								.40	.12			.85					1.97
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	1.80	0.12	0.00	0.00	0.14	1.38	0.00	0.00	0.00	4.32
								2.54	.02			.15	1.60				5.28
							.40	1.45	.03				1.45				4.35
								1.53	.19			.07	.83				4.00
								1.70	.26			.33	1.65				6.07

## DAILY AND MONTHLY PRECIPITA

STATIONS.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<i>Hudson Valley</i> ....	0.00	0.00	0.00	T.	0.00	0.08	0.36	0.00	0.00	0.00	0.00	0.00	T.	0.92
Albany .....				T.			.16							.49
Bethlehem Centre .....							.16							
Lebanon Springs .....						.21								1.01
Honeymead Brook .....							.55						.01	1.70
Pawling .....														
Poughkeepsie .....							.54							.84
Wappinger's Falls .....				T.			.41						.08	1.41
West Point .....				T.			.65							1.10
Boyd's Corners .....														
Carmel .....														
S. East Reservoir .....							.16							
Schoadack Depot .....							.21							.45
Stillwater .....														
Rondout .....							.32							.38
Easton .....														
<i>Mohawk Valley</i> ....	0.00	0.00	0.54	0.00	0.29	0.00	0.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rome .....			.54		.29		.21							
Utica .....														
<i>Champlain Valley</i> ..	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.65
Plattsburgh Barr'ks .....							.12							.65
Port Henry .....														
Glen Falls .....														
Whitehall .....														
<i>St. Lawrence Val.</i> ..	0.00	0.00	0.00	0.11	0.01	0.00	0.08	T.	0.01	0.00	0.00	0.00	0.00	0.19
Malone .....				.31	.04				.04					T.
Madison Barracks .....							.08							.32
Watertown .....														
Canton .....														
De Kalb Junction .....				.07			.05							.94
North Hammond .....														
Ogdensburg .....				.07										*
Potsdam .....				.08			.02							*
<i>Great Lakes</i> .....	0.00	0.00	0.00	0.41	T.	0.01	0.06	T.	T.	0.00	0.00	0.00	0.21	0.91
Dunkirk .....				.46			.05						.47	1.22
Buffalo .....				.61			.08		T.				.28	.93
Eden Centre .....				.65		T.							.15	1.30
Adams Centre .....														
Brockport .....				.48		.03	.04						.56	.49
Rochester .....				.42		T.	.01						.06	.93
Fort Niagara .....				.62		.06							*	*
Hess Road Station .....				.75		T.	.15							1.15
Baldwinsville .....				.25		.05							.55	.10
Albion .....														
Lyndonville .....														
Demster .....				.12			.07							1.06
Oswego .....				.23	T.	T.	T.						T.	.84
Palerino .....				.23			.10						.62	.84
Phoenix .....							.22							.50
Lyons .....				.29										.90
Erie, Pennsylvania .....				.69			.05	T.					.68	1.62
<i>Central Lakes</i> .....	0.00	0.00	0.00	0.28	0.00	T.	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.49
Fleming .....				.36										
Geneva .....				.25									.79	
Watkins .....														
Romulus .....				.29										.68
Ithaca .....				.20		T.							.20	1.09
Penn Yan .....														
Average .....	0.00	0.00	0.05	0.14	0.03	0.02	0.14	T.	0.01	0.00	0.00	T.	0.11	0.69

\* Amount included in next measurement. † Not used in computing the averages. ‡ Record for

TION FOR OCTOBER, 1893 — (INCHES) — (Concluded).

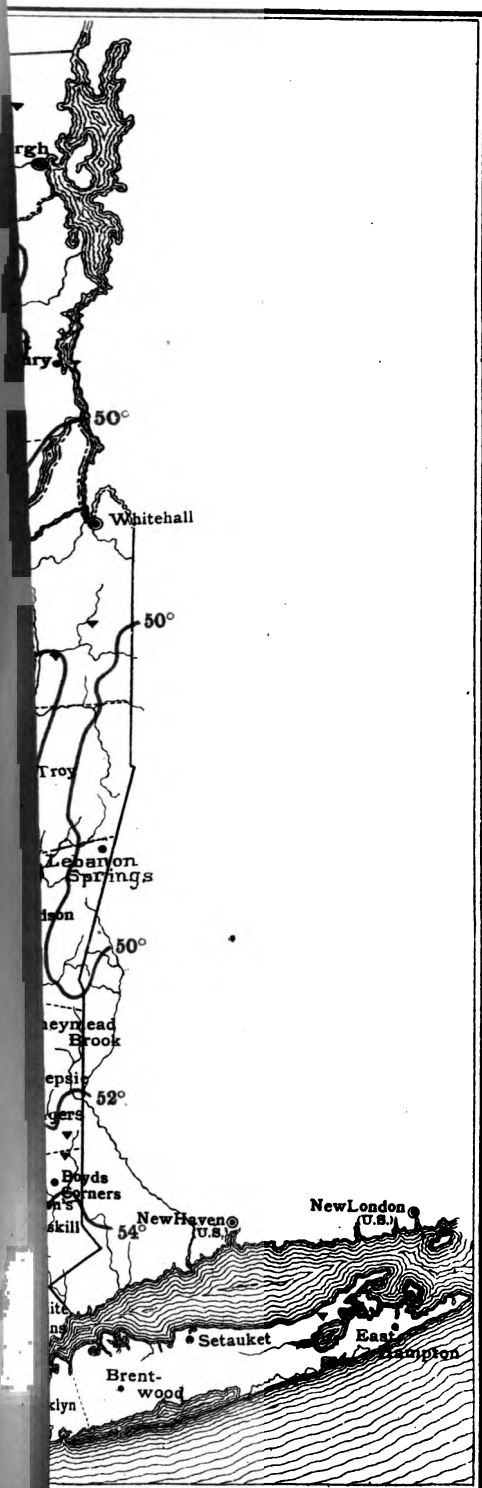
15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total.
T.	T.	0.00	0.00	0.00	0.00	0.00	0.00	0.52	0.02	0.00	0.00	0.17	0.80	0.10	T.	0.00	2.89
T.	T.							.25	.08			.15	.57	.02	T.		1.67
T.								.62	.12			*	†.72	.11	T.		2.79
								.52	T.			.82	.63				3.73
								.47	T.				.24	.66			2.75
								.52	.08			.24	.88		T.		3.63
								1.20					1.30				4.25
T.								.28				.47	.61				1.97
								.38					1.37				2.45
0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.22	0.98	0.07	0.08	0.00	2.56
.07										.10		.22	.98	.07	.08		2.56
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.85
														.08			0.85
0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.05	0.00	0.00	0.25	0.44	0.10	0.01	0.00	1.21
.17								.05	T.			.21	.54	.64			1.20
.22												.86	.87	.28	.66		1.74
.16									.09			.42	.30	.08			1.26
.14									.16			*	†.26				0.63
1.30													.64	.18			1.02
0.13	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.01	0.01	0.02	0.36	0.07	0.06	0.10	T.	2.43
.13								.03			.06	.36	.06	T.	.06		2.20
.12	T.								T.		.08	.27	.21	T.	T.	T.	2.53
.40								.15			.10	.45	.10		.15		3.45
.01								T.			T.	.18	T.	T.	.06		1.85
.09	.01							.08			.01	.19	.02	.01	.04		1.83
.11									.01		*	†.16	*	†.10			2.62
.25								T.			.07	.14	.10		.08		2.69
.06	T.											.78	T.	.17	T.		1.95
.13	.08							.05		.08		.58	.65	.18	.14		2.54
.08	T.							.07	.09	T.	.01	.42	.10	.06	.35	T.	2.26
								.03	.04		.02	.30	.26	.30			2.14
.15									.05	.10		.22	.35	.08			1.62
.11	.11							.09	T.	T.		.41	T.	T.			1.91
.30									T.		.02	.37	.06	.04	.11		3.84
0.06	T.	0.00	0.00	0.00	0.00	T.	0.00	0.06	0.01	T.	0.00	0.26	0.25	T.	T.	0.00	1.65
.11								.15	.05			.62	.11	T.	T.		0.98
												.37					1.83
T.								.10	T.			.88	T.	T.			1.65
.10	T.					T.		.01	T.			.27	.28				2.15
0.10	0.01	0.00	0.00	T.	0.00	T.	0.01	0.29	0.04	0.01	0.01	0.24	0.48	0.08	0.02	T.	2.41

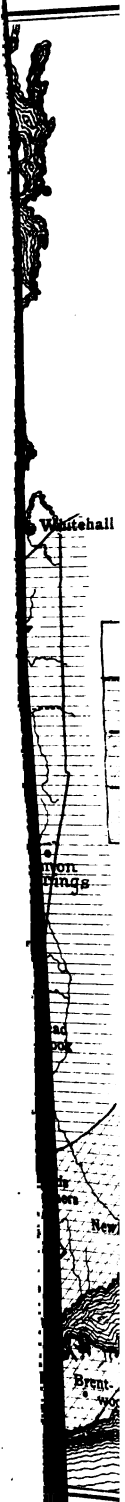
the month incomplete. | Reports too late to be used in computing the averages. T=Trace.

## TEMPERATURE AND RAIN

STATIONS.	County.	TEMPERATURE — (DEGREES FAHR.).									
		Normal for the month of October.	Length of record, years.	Record begins.	Record ends.	Mean for October, 1893.	Departure from normal.	EXTREMES OF MONTHLY MEAN TEMPERATURE FOR OCTOBER.			
								Highest.	Year.	Lowest.	Year.
Western Plateau		47.1				50.8	+3.7				
Angelica*	Allegany	45.8	11	1851	1893	48.4	+2.6	49.1	54.76	39.6	1889
Humphrey	Cattaraugus	46.9	11	1883	1893	50.4	+3.5	49.8	1886	43.2	1888
Elmira*	Chemung	48.6	15	1850	1893	53.5	+4.9				
Eastern Plateau		47.2				49.9	+2.6				
Cooperstown	Otsego	46.4	40	1854	1893	48.2	+1.8	53.3	1879	40.7	1865
Waverly	Tioga	48.1	11	1883	1893	51.6	+3.5	51.8	1882	42.9	1889
Northern Plateau		45.9				49.6	+3.7				
Lowville	Lewis	45.9	26	1827	1893	49.6	+3.7				
Coast Region		54.2				56.8	+2.6				
New York City	New York	55.1	23	1871	1893	57.6	+2.5	59.8	1879	49.2	1888
Setauket	Suffolk	53.3	9	1885	1893	55.9	+2.6	58.0	1885	50.0	1883
Hudson Valley		51.4				52.6	+1.2				
Albany	Albany	50.7	20	1874	1893	54.0	+3.3	58.9	1879	44.5	1888
Honeymead Brook	Dutchess	48.7	11	1883	1893	51.4	+2.7	51.7	1884	45.7	1889
Poughkeepsie*		51.6	21	1825	1893	52.3	+0.7				
West Point	Orange	55.0	63	1824	1891			60.0	1862	44.0	1888
Rondout*	Ulster	50.8	23	1828	1892			57.1	1842	40.0	1840
M. hawk Valley		47.4									
Utica*	Oneida	47.4	29	1826	1892			52.1	1839	39.3	1836
Champlain Valley		47.2				49.0	+1.8				
Plattsburgh Barracks	Clinton	47.2	35	1839	1893	49.0	+1.8	50.7	1851	42.8	1841
St. Lawrence Valley		47.4				50.4	+3.2				
Madison Barracks	Jefferson	49.5	21	1824	1893	51.2	+1.7	55.3	1825	44.3	1842
Canton*	St. Lawrence	47.2	31	1862	1892			59.2	1879	38.8	1889
North Hammond		48.0	11	1866	1892			54.3	1870	46.7	1868
Potsdam*	"	45.0	26	1828	1893	49.6	+4.6	52.0	1835	36.9	1836
Great Lakes		49.6				52.6	+2.8				
Buffalo	Erie	50.3	23	1871	1893	54.0	+3.7	53.3	1879	40.0	1880
Rochester	Monroe	49.6	23	1871	1893	53.0	+3.4	57.6	1879	43.5	1888
Fort Niagara	Niagara	50.7	20	1849	1893	54.1	+3.4	53.8	1867	46.8	1859
Baldwinsville	Onondaga	47.5	18	1849	1893	51.0	+3.5				
Oswego	Oswego	50.7	23	1871	1893	52.0	+1.3	57.1	1879	41.9	1878
Palermo		47.2	41	1853	1893	50.2	+3.0	53.9	1879	42.3	1865
Lyons	Wayne	48.4	5	1860	1891						
Erie, Pennsylvania	Erie	52.5	20	1874	1893	54.0	+1.5	60.0	1879	46.0	1889
Central Lakes		49.4				51.8	+2.4				
Geneva*	Ontario	49.4	17	1854	1893	52.6	+3.2				
Ithaca	Tompkins	49.4	15	1879	1893	51.0	+1.6	56.0	1879	42.9	1880
Average departure							+2.8				

\* Location of the instruments has been changed.



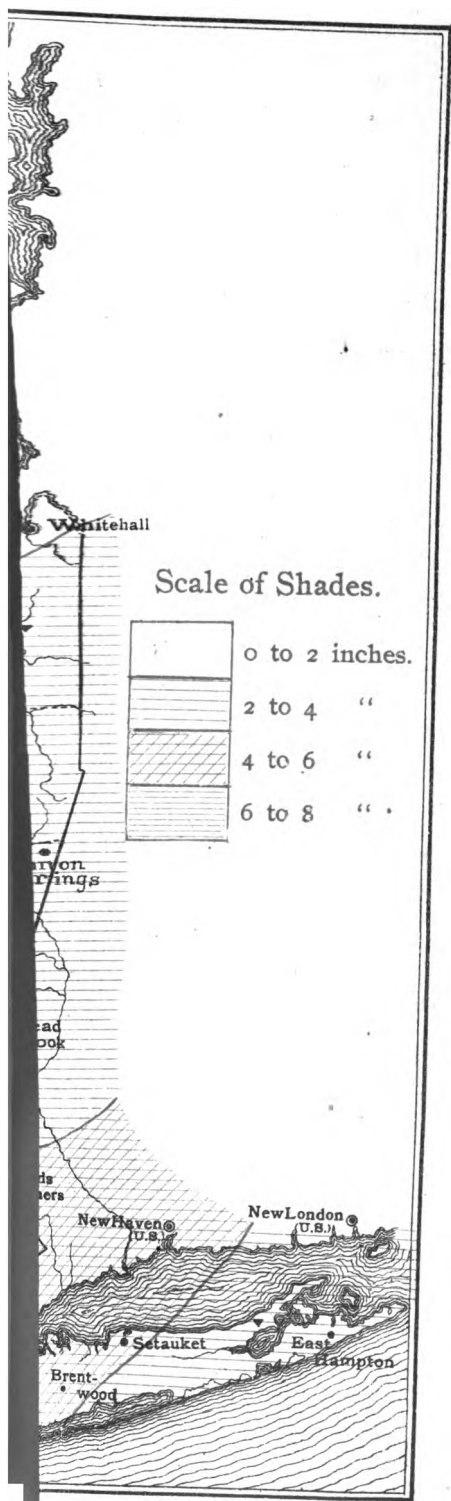


Whitehall

London

Brent

New







## FALL STATISTICS FOR OCTOBER, 1893.

STATIONS.	County.	RAINFALL (INCHES).									
		Average for the month of October.	Length of record, years.	Record begins.	Record ends.	Total for October, 1893.	Departure from the average.	EXTREMES OF MONTHLY PRECIPITATION FOR OCTOBER.			
								GREATEST.		LEAST.	
								Amount.	Year.	Amount.	Year.
<i>Western Plateau</i> .....		3.32	.....	.....	.....	3.14	-0.18	.....	.....	.....	.....
Angelica.....	Allegany.....	3.15	8	1856	1893	2.49	-0.66	6.44	1873	1.35	1874
Humphrey.....	Cattaraugus.....	3.62	11	1883	1893	4.27	+0.65	5.94	1890	1.55	1886
Elmira.....	Chemung.....	3.18	14	1850	1893	2.66	-0.52	7.00	1861	1.30	1892
<i>Eastern Plateau</i> .....		2.92	.....	.....	.....	2.43	-0.49	.....	.....	.....	.....
Cooperstown.....	Otsego.....	3.29	40	1854	1893	1.27	-2.02	6.65	1857	0.88	1886
Port Jervis.....	Orange.....	2.86	9	1890	1893	3.67	+0.81	7.25	1890	0.61	1892
Waverly.....	Tioga.....	2.61	11	1882	1893	2.34	-0.27	5.60	1885	0.70	1888
<i>Northern Plateau</i> .....		3.13	.....	.....	.....	1.69	-1.44	.....	.....	.....	.....
Lowville.....	Lewis.....	3.13	24	1827	1893	1.69	-1.44	.....	.....	.....	.....
<i>Coast Region</i> .....		4.24	.....	.....	.....	4.64	+0.40	.....	.....	.....	.....
New York City.....	New York.....	3.41	23	1871	1893	5.28	+1.87	7.69	1877	0.63	1892
Setauket.....	Suffolk.....	5.08	9	1885	1893	4.00	-1.08	10.20	1890	0.90	1892
<i>Hudson Valley</i> .....		3.67	.....	.....	.....	3.22	-0.45	.....	.....	.....	.....
Albany.....	Albany.....	3.19	20	1874	1893	1.67	-1.52	7.86	1877	0.37	1882
Honeymead Brock.....	Dutchess.....	3.24	10	1884	1893	3.73	+0.49	6.43	1890	0.91	1892
West Point.....	Orange.....	3.80	46	1840	1893	4.25	+0.45	19.25	1855	T.	1892
Boyd's Corners.....	Putnam.....	4.99	9	1866	1891	.....	.....	9.46	1869	0.87	1868
Rondout.....	Ulster.....	3.13	22	1829	1892	.....	.....	8.02	1849	0.42	1842
<i>Mohawk Valley</i> .....		3.35	.....	.....	.....	.....	.....	.....	.....	.....	.....
Utica.....	Oneida.....	3.35	36	1826	1892	.....	.....	7.69	1886	1.27	1886
<i>Champlain Valley</i> .....		2.89	.....	.....	.....	0.85	-2.04	.....	.....	.....	.....
Plattsburgh Barracks.....	Clinton.....	2.89	34	1840	1893	0.85	-2.04	7.64	1860	0.46	1879
<i>St. Lawrence Valley</i> .....		3.32	.....	.....	.....	1.35	-1.97	.....	.....	.....	.....
Malone.....	Franklin.....	3.05	14	1880	1893	1.30	-1.75	.....	.....	.....	.....
Madison Barracks.....	Jefferson.....	3.84	33	1840	1893	1.74	-2.10	12.39	1860	0.92	79-82
North Hammond.....	St. Lawrence.....	3.41	7	1865	1892	.....	.....	.....	.....	.....	.....
Potsdam.....	St. Lawrence.....	2.97	26	1828	1893	1.02	-1.95	6.11	1843	0.83	1839
<i>Great Lakes</i> .....		3.28	.....	.....	.....	2.55	-0.72	.....	.....	.....	.....
Buffalo.....	Erie.....	3.66	23	1871	1893	2.53	-1.13	7.33	1881	0.74	1879
Rochester.....	Monroe.....	2.99	23	1871	1893	1.88	-1.16	8.67	1873	0.62	1882
Fort Niagara.....	Niagara.....	2.30	38	1841	1893	2.62	+0.32	4.14	1849	0.69	1892
Oswego.....	Oswego.....	3.27	23	1871	1893	2.26	-1.01	7.55	1878	0.50	1882
Palermo.....	Oswego.....	3.40	34	1864	1893	2.24	-1.16	7.90	1862	0.30	1882
Erie, Pennsylvania.....	Erie.....	4.05	20	1874	1893	3.84	-0.21	8.17	1885	1.18	1879
<i>Central Lakes</i> .....		2.96	.....	.....	.....	1.99	-0.97	.....	.....	.....	.....
Geneva.....	Ontario.....	2.96	23	1861	1893	1.88	-1.12	6.30	1867	1.27	1868
Ithaca.....	Tompkins.....	2.97	15	1879	1893	2.15	-0.82	5.26	1886	0.31	1879
Average departure.....		.....	.....	.....	.....	.....	-0.72	.....	.....	.....	.....

during the period covered by the record.

## Meteorological Summary for November, 1893.

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The average atmospheric pressure (reduced to sea-level and 32 degrees Fahr.) for the State of New York during November was 30.08 inches. The highest barometer was 30.70 inches at Rochester on the 26th and the lowest was 29.48 inches at Number Four, Lewis county, on the fifteenth. The mean pressure was greatest in the eastern portion of the State, being 30.12 inches at New York city; while at Erie, in the Great Lake region, the value was 30.05. The average value at six stations of the National Bureau was about 0.02 inch above the normal; an excess of 0.04 inch occurring at eastern stations.

The mean temperature for the State was 37.4 degrees; the highest general daily mean, 49.4 degrees, occurring on the second, and the lowest, 22.2 degrees, on the twenty-sixth. The highest local monthly mean was 44.0 degrees at New York city; and the lowest was 32.0 degrees at Number Four, Lewis county. The maximum temperature reported during the month was 73 degrees at Watkins on the ninth and eleventh; and the minimum was 3 degrees below zero at Lowville on the twenty-sixth. The mean monthly range of temperature for the State was 48.0 degrees; the greatest range, 65.0 degrees, occurring at Lowville, and the least, 35 degrees, at Cortland. The mean daily range for the State was 16 degrees; the maximum value being 41 degrees at North Hammond on the seventh, and the minimum 1.0 degrees at Madison Barracks on the twenty-third. The mean tempera-

tures for the various sections of the State were as follows: The Western plateau, 36.6 degrees; the Eastern plateau, 35.7 degrees; the Northern plateau, 33.0 degrees; the Coast region, 43.0 degrees; the Hudson valley, 38.3 degrees; the Mohawk valley, 37.0 degrees; the Champlain valley, 35.2 degrees; the St. Lawrence valley, 36.7 degrees; the Great Lake region, 38.9 degrees, and the Central Lake region, 39.2 degrees. The average of the mean temperatures at twenty-five stations possessing records for previous years was 0.2 degrees above the normal. The temperature was generally in excess of the normal in the northwestern section, and deficient in the Hudson valley.

The mean relative humidity was 74 per cent. The mean dew point was 31 degrees.

The average precipitation for the State was 2.12 inches of rain and melted snow, as derived from the records of seventy-eight stations. The heaviest general rainfall, ranging from two to four inches, occurred on the northern and western highlands and the southeastern part of the State; while in the central Hudson valley and the Central Lake region, the total amount was less than one inch. The greatest local precipitation was 5.59 inches at Eden Centre, Erie county, and the least was 0.53 inches at Stillwater. Data upon heavy daily rainfall will be found in the following table of meteorological data. The heaviest precipitation of the month occurred on the fourth, in the Atlantic Coast region, but elsewhere on the twenty-eighth and twenty-ninth. The heaviest snowfall during November occurred on the highlands east of Lakes Erie and Ontario, the total amounts ranging from twenty to thirty inches. Over the central highlands generally the total averaged about five inches, while in the Atlantic Coast region the amount was inappreciable.

The average precipitation at twenty-three stations possessing records for previous years was 0.77 inch below the normal. Deficiencies occurred at all stations excepting Port Jervis and Lowville. At Albany the amount was the least for November during twenty years of observation, and at Ithaca was the least since 1880.

The average number of days on which the precipitation amounted to 0.01 inch or more was 9.1; the number of rainy days being much in excess of this average along the lakes, and below it in the Coast region. The average number of clear days for the State was 6.9; of partly cloudy days, 11.4; and of cloudy days, 11.7. The mean cloudiness for the State was 57 per cent. The greatest cloudiness obtained over the Western plateau and the Central Lake region, and the least in the southeastern part of the State.

The prevailing wind direction was from the southwest. The average total wind travel at six stations of the National Bureau was 8,568 miles, which is above the average for this month in previous years. The maximum velocity recorded at any of the above stations was fifty-two miles per hour at Buffalo, on the twenty-second.

Thunderstorms were observed at LeRoy and Baldwinsville on the second.

Hail fell at Setauket on the fifteenth; at South Canisteo on the twenty-first, twenty-second and twenty-seventh, and at LeRoy on the twenty-first. Sleet was reported at Honeymead Brook on the nineteenth and twenty-third, and at Eden Centre and Hess Roads on the twenty-seventh, at Eden Centre and Turin on the twenty-eighth, and at Turin and Friendship on the twenty-ninth.

Solar halos were reported on the seventh, eighth, ninth, twelfth, fourteenth, twenty-first and twenty-ninth; and lunar halos on the fifteenth, twentieth and twenty-second.

The data for this summary have been derived from the records of fifty-two Voluntary Observers, six Stations of the National Bureau, five Military Posts and eighteen Special Rainfall Observers.

During November the weather of New York was influenced by six areas of high and eight areas of low pressure; the number of the latter being somewhat below the average for the month in previous years. From the first to the twenty-third, five depressions moved eastward across the continent near the northern border of the United States; passing centrally over the eastern Canadian provinces on the second, thirteenth-fifteenth, seventeenth-eighteenth, nineteenth and twenty-third. A storm also appeared off the central Atlantic coast on the ninth, but moved quickly northeastward beyond the field of observation. The depressions of this series were, for the most part, broad and irregular in form, this being the case especially with the third and fifth, which covered eastern Canada from the thirteenth to the fifteenth, and from the seventeenth to the nineteenth, causing a southerly wind circulation and a marked rise of temperature. The rainfall accompanying these storms was moderate in amount; the heavy precipitation which occurred in the Coast region on the fourth being due to a high pressure system which caused an inflow of moist air from the ocean. The sixth depression was an energetic storm which, although passing eastward considerably northward of this State, caused very high winds along the lakes, and a copious precipitation in northern and southeastern New York on the twenty-third. The first

severe winter weather of the year succeeded this storm; and the two depressions which followed also pursued a course common during the winter, passing from the northwestern States to the central Mississippi valley, and thence northeastward to the coast. The first of these, a sharply defined storm, passed over Canada on the twenty-eighth, giving a heavy general precipitation and high winds. The second storm passed northeastward directly over this State, but with decreasing energy, giving only moderate rains which fell mainly near the lakes.

The anticyclones in general moved from the Pacific coast to the central or southern States, and thence to the northern or central Atlantic coast, spreading over New York in most cases. The persistence of several of the areas over the northeastern States gave a greater proportion of fair days than is common during November; this being true especially of the period between the fourth and the twelfth, when the weather was governed mainly by two large high pressure systems. Following these, a rise of pressure occurred over the southern States on and about the seventeenth, while on the twentieth and twenty-first a ridge of high pressure extended from the lakes to the Gulf of Mexico; the first area giving an increase and the latter a decrease of temperature. The fifth and last anticyclone of November passed from the central to the eastern States on the twenty-fifth-twenty-seventh, with a central pressure of 30.7 inches, and was accompanied by the lowest temperatures of the month; but mild weather again prevailed as the area passed eastward over the Atlantic.

Plowing and other farm work were general during the first half of the month, and winter crops maintained a good condition in most cases, although ground water was very low in portions

of the central Hudson valley and the vicinity of the Great and Central Lakes. At Malone, Franklin county, soft maples were budding, strawberries and dandelions in bloom, and meadows green, on the fifth. The ground was protected by snow to some extent during the cold period near the close of the month; the amount being sufficient to make good sleighing on the southwestern highlands.

Sharp earthquake shocks occurred in the St. Lawrence valley between 11.45 and 11.47 a. m. on the twenty-seventh, and also, with lesser intensity, in the Hudson valley from five to ten minutes later. No serious damage resulted.



## METEOROLOGICAL DATA

LOCATION OF STATIONS.			BAROMETER.						HUMIDITY.		TEMP.		
STATIONS.	County.	Elevation, feet.	Mean.	Highest.	Date.	Lowest.	Date.	Monthly range.	Mean relative.	Dew point (degrees).	Mean of tri-daily observations.	Mean of maximum and minimum.	Highest.
<i>Western Plateau</i> .....													
Alfred Centre .....	Allegany	1824										36.6	71
Angelica .....	Allegany	1340									34.2	34.5	58
Friendship .....	Allegany	1550	30.11	30.64	26	29.62	22	1.02			34.6	34.8	64
												36.0	61
Humphrey .....	Cattaraugus	1950									36.9	36.7	65
Arkwright .....	Chautauqua	1260										37.2	60
Elmira .....	Chemung	863											
LeRoy .....	Genesee	888										37.2	64
Mt. Morris .....	Livingston	625										37.4	64
Lockport .....	Niagara	616										38.1	65
Victor .....	Ontario	650											
Wedgewood .....	Schuyler	1350									34.5	36.2	63
Addison .....	Steuben	1000									37.0	37.7	60
South Canisteo .....	Steuben	1480									35.0	35.8	62
Arcade .....	Wyoming	1557									34.2	35.4	63
Varysburg .....	Wyoming											38.2	71
Italy Hill .....	Yates	1650											
<i>Eastern Plateau</i> .....													
Binghamton .....	Broome	870										35.7	63
Oxford .....	Chenango	1250									36.6	37.1	63
												35.5	63
Cortland .....	Cortland	1120										35.8	55
South Kortright .....	Delaware	1700										33.8	60
Brookfield .....	Madison	1350									33.9	33.0	61
Middletown .....	Orange	660									38.2	39.3	56
Port Jervis .....	Orange	470										37.1	56
Coopertown .....	Otsego	1300									35.0	34.9	61
New Lisbon .....	Otsego	1234										34.7	63
Perry City .....	Schuyler	1038									35.0	35.5	61
Waverly .....	Tioga	825									37.2	37.5	63
Minnewaska .....	Ulster	1800									34.4	34.9	53
<i>Northern Plateau</i> .....													
Lyon Mountain .....	Clinton	1917										33.0	62
Keen Valley .....	Essex												
Ampersand .....	Franklin	1600											
Gloversville .....	Fulton	802									33.4	34.1	59
Blue Mt. Lake .....	Hamilton												
Constableville .....	Lewis	1246											
Lowville .....	Lewis	900										33.5	62
Number Four .....	Lewis	1571	30.10	30.64	26	29.48	15	1.16				32.0	52
Turin .....	Lewis	1240										32.5	53
<i>Coast Region</i> .....													
New York City .....	New York	164	30.12	30.67	26	29.69	22	1.08	71	34		43.0	62
Willet's Point .....	Queens											44.0	62
Brentwood .....	Suffolk	75										41.7	62
Setauket .....	Suffolk	40							76	35	42.4	43.4	61
<i>Hudson Valley</i> .....													
Albany .....	Albany	85	30.11	30.67	26	29.61	15	1.06	78	31		38.3	61
Lebanon Springs .....	Columbia	880										39.0	58
Honeymead Brook .....	Dutchess	450									36.9	35.8	58
												37.2	57

FOR NOVEMBER, 1893.

TEMPERATURE — (IN DEGREES FAHR.).										SKY.			PRECIPITATION — (INCHES).					WIND.	
Date.	Lowest.	Date.	Monthly range.	Mean daily range.	Greatest daily range.	Date.	Least daily range.	Date.	Number of clear days.	No. of partly cloudy days.	Number of cloudy days.	Number of days on which 0.01 or more inches fell.	Total.	Greatest rainfall.	Duration.†	Date.	Total snow fall.	Prevailing direction.	
1	7	h	49	17	40	6	3	aa	5.8	12.2	12.0	11.3	2.17	1.20	H. M.	15			
2	8	26	50	15	34	17	3	25					2.93				12.0		
3	7	23	57	17	34	6	4	25				11	2.12	0.40		25	10.0	S. W.	
4	7	h	54	19	39	17	7	25	4	16	10	13	2.12	0.58		28	9.8	W.	
5	16	i	49	18	31	q	4	24	3	12	15	10	2.56	1.20		15	24.0	S. W.	
6	20	26	40	11	11	7	3	aa											
7	20	27	44	15	28	1	5	23	4	13	13	14	1.75	0.45		28	9.0	S. W.	
8	19	16	45	18	32	7	7	24	3	14	13	6	1.10	0.32		28		W.	
9	19	27	46	14	28	7	5	24	5	11	14	10	3.34	1.00		29	2.0	S. W.	
10																			
11	15	26	48	19	33	7	5	23	6	15	9	8	1.60	0.51		28	6.0	S. W.	
12	20	27	40	16	32	17	3	25	12	12	6	6	1.24	0.77		27-28	0.2	S. W.	
13	12	j	50	18	39	17	5	25	10	6	14	14	2.03	0.80		27	8.4	N. W.	
14	11	26	52	17	30	17	6	aa	3	14	13	16	1.95	0.35		15	23.6		
15	12	26	59	21	40	6	7	25	8	9	13	16	3.27	0.60		28	7.5		
16																			
17	8	26	45	17	37	6	4	ab	7.7	10.6	11.7	8.6	1.75	1.10		28			
18	19	21	44	18	31	7	5	24	9	10	11	9	1.38	0.59	1 00	28	1.8	N. W.	
19	13	27	50	19	32	7	10	ac				8	1.72	0.50		28	1.5		
20	20	26	35	13	21	27	4	4				11	1.94	0.65		28			
21	9	21	51	20	34	9	7	23				4	1.10	0.69		28		W.	
22	8	26	53	19	33	9	9	ad	8	8	14	11	1.11	0.26		2	7.0	N. W.	
23	18	27	38	15	29	19	4	25				8	2.59	0.76		27	T.	S.	
24	15	27	41	18	29	27	6	25	8	10	12	9	3.47	1.10		28	7.0	W.	
25	12	27	49	16	28	2	6	19	12	6	12	11	2.20	0.45		27	4.0	S.	
26	11	27	52	20	32	t	4	26				9	0.95	0.25		27-28	3.0		
27	15	h	46	17	35	7	4	24	5	13	12	10	0.91	0.34		28	2.5	S. W.	
28	15	27	48	19	37	6	4	24	4	17	9	7	1.61	0.84	10 30	27-28	0.5	S.	
29	17	27	36	12	18	18	5	25				4	2.05	0.80	13 00	27-28			
30	—3	26	56	17	35	7	3	19	7.3	6.2	16.5	11.0	3.12	0.87		30			
31																			
1																			
2	11	h	48	19	31	6	4	23	6	4	20	10	1.34	6.35		22	4.4	W.	
3																			
4	—3	26	65	17	35	7	5	19	10	8	12	10	3.75	0.87		30	15.0	W.	
5	—1	26	53	15	28	27	3	19	5	7	18	11	3.60	0.68		27	19.8	S.	
6	2	26	56	16	28	2	4	19	8	6	16	13	3.80	0.74		21-22	22.8	S. W.	
7	23	16	37	14	28	18	5	ae	10.0	11.5	8.5	6.3	3.34	1.53		4			
8	26	26	36	12	21	17	5	4	9	12	9	9	3.71	1.19		4		S. W.	
9	23	16	39	16	28	18	5	af				4	3.06	1.37	14 00	4		N. W.	
10																			
11	26	27	35	13	22	u	6	ag	11	11	8	6	3.25	1.53		4	0.0	W.	
12	12	27	43	17	36	11	4	25	6.0	15.3	8.7	6.9	2.00	1.60	5 00	28			
13	16	27	42	15	25	12	5	19	3	16	11	6	0.91	0.48		28		S.	
14	12	27	46	18	36	11	8	bb	3	10	17	10	2.00	0.43	14 00	21-22	3.1	N. W.	
15	15	27	42	17	28	27	7	4	4	16	10	10	1.94	0.79	6 00	28	2.4	S. W.	

## METEOROLOGICAL DATA

LOCATION OF STATIONS.			BAROMETER.					HUMIDITY.		TEMP.		
STATIONS.	County.	Elevation, feet.	Mean.	Highest.	Date.	Lowest.	Date.	Monthly range.	Mean relative.	Dew point (degrees).	Mean of tri-daily observations.	Mean of maximum and minimum.
<i>Hudson Valley—(Con.)</i>												
Poughkeepsie	Dutchess	180									39.1	61
Wappinger's Falls	Dutchess										39.0	58
West Point	Orange	167									40.7	
Boyd's Corners	Putnam	546										
Carmel	Putnam	500										
Stillwater	Saratoga										38.0	37.4
Rondout	Ulster	150									38.2	57
<i>Mohawk Valley</i>												
Rome	Oneida	445									37.0	64
											37.0	64
<i>Champlain Valley</i>												
Plattsburgh Barracks	Clinton	125									35.2	58
Port Henry	Essex										35.2	58
Glens Falls	Warren	340										
Whitehall	Washington											
<i>St. Lawrence Valley.</i>												
Malone	Franklin	819									34.0	36.7
Madison Barracks	Jefferson	268									34.3	61
Watertown	Jefferson	488									38.6	67
Canton	St. Lawrence	304										
North Hammond	St. Lawrence	300									38.2	89.0
Ogdensburg	St. Lawrence	258									36.6	37.1
Potsdam	St. Lawrence	300									34.4	*34.4
<i>Great Lakes</i>												
Dunkirk	Chautauqua	590										38.0
Buffalo	Erie	690	30.01	30.65	26	29.51	22	1.14	70	30		38.9
Eden Centre	Erie	690										38.5
Brockport	Monroe	520										38.7
Rochester	Monroe	621	30.08	30.70	26	29.58	22	1.12	76	31		39.0
Fort Niagara	Niagara	263										41.2
Hess Road Station	Niagara	330							81	32		39.4
Baldwinsville	Onondaga	390									37.4	37.3
Albion	Orleans	521										
Oswego	Oswego	304	30.05	30.68	26	29.56	25	1.12	72	29		38.0
Palermo	Oswego	460							67	26	35.9	35.9
Lyons	Wayne	407										
Erie, Pennsylvania	Erie	681	30.05	30.65	26	29.50	21	1.15	70	30		40.0
<i>Central Lakes</i>												
Fleming	Cayuga	1000										39.2
Geneva	Ontario	459									37.6	38.5
											38.9	39.2
Watkins	Schuyler	737										43.9
Romulus	Seneca	719							80	30		38.8
Ithaca	Tompkins	793	30.07	30.68	26	29.49	25	1.19			38.5	36.6
Mean			30.08	30.70	26	29.48	15	1.12	74	31		37.4

\* Mean of the tri-daily observations. ‡ Mean of the maximum and minimum by the  
from the tri-daily observations are derived by the formula (7 A. M. + 2 P. M. + 9 P. M. + 9  
within twenty-four hours. § Means for twenty-one days.

(a) 3, 9; (b) 2, 3, 6; (c) 2, 3; (d) 2, 17; (e) 4, 7, 11; (f) 1, 2; (g) 9, 11; (h) 26, 27; (i) 18, 25, 26; (j)  
(f) 7, 17; (u) 17, 27; (v) 1, 2, 6; (w) 2, 6; (x) 9, 10, 11; (y) 10, 13; (z) 1, 7; (aa) 24, 25; (ab) 4, 24  
(bc) 4, 25; (bd) 20, 23; (be) 24, 26; (bf) 23, 24; (ec) 9, 20; (ed) 19, 30; (ce) 4, 21, 26; (cf) 4, 24.

## STATE METEOROLOGICAL BUREAU.

239

FOR NOVEMBER, 1893 — (Concluded).

TEMPERATURE — (IN DEGREES FAHR.)										SKY.		PRECIPITATION — (INCHES.)					WIND.	
Date.	Lowest.	Date.	Monthly range.	Mean daily range.	Greatest daily range.	Date.	Least daily range.	Date.	Number of clear days.	No. of partly cloudy days.	Number of cloudy days.	Number of days on which 0.01 or more inches fell.	Total.	Greatest rainfall.	Duration.†	Date.	Total snow fall.	Prevailing direction.
2	13	27	48	20	31	v	8	25	11	16	3	6	1.63	0.87		28		N. W.
3	16	27	43	17	30	1	8	26	11	12	7	10	3.04	1.60	5 00	28	0.2	N. W.
...	17	27	...	17	32	10	4	25	...	...	...	5	3.63	1.50	7 30	27-28	...	W.
c	15	27	43	16	27	6	5	24	4	23	4	5	0.53	0.25	6 00	28		W.
2	19	27	38	15	23	w	6	bc	...	...	...	3	2.20	1.20		27-28	2.0	S.
3	8	26	56	17	29	2	5	30	...	...	...	11	2.10	0.59	...	19	...	...
3	8	26	56	17	29	2	5	30	...	...	...	11	2.10	0.59	...	19	...	...
3	10	26	48	17	34	27	4	15	...	...	...	8	1.28	0.88	8 00	29	...	N. W.
3	10	26	48	17	34	27	4	15	...	...	...	8	1.28	0.88	8 00	29	0.7	N. W.
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
2	6	26	55	17	41	7	1	23	7.0	15.0	8.0	9.2	2.08	1.30	...	27-28	...	...
2	6	26	56	15	28	17	4	bd	8	7	15	11	1.45	0.50	...	30	2.5	N. W.
2	10	26	57	16	37	27	1	23	...	...	...	9	2.74	...	...	...	4.0	W.
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
e	14	27	51	18	41	7	8	be	2	25	3	11	2.26	0.53	...	27	1.5	S.
2	10	25	55	18	39	7	9	20	11	13	6	6	1.88	...	...	...	0.0	S. W.
...	12	26	...	...	...	...	...	...	...	...	...	...	2.05	1.30	...	27-28	...	S. W.
11	8	26	46	14	40	17	2	bf	6.9	7.8	15.3	13.8	2.60	1.45	...	29	...	...
f	24	26	39	11	30	7	2	24	8	4	18	15	2.86	1.20	...	15	...	...
2	21	26	45	12	33	7	3	23	3	13	14	16	2.63	0.61	...	27	...	N. W.
11	18	m	51	23	40	17	7	23	9	5	16	16	5.59	1.00	...	15	28.0	S. W.
1	21	27	42	16	29	17	9	cc	...	...	...	10	1.00	0.57	...	27	...	...
2	22	27	44	12	29	7	3	23	7	8	15	17	1.93	0.48	...	27	...	S. W.
2	25	h	43	13	25	12	5	24	...	...	...	8	2.42	1.45	...	29	...	N. W.
2	22	27	43	14	28	17	5	24	4	10	16	12	2.86	1.12	16 00	29	3.5	S. W.
2	12	25	52	15	26	27	7	20	10	5	15	13	2.11	0.37	...	16	5.0	...
2	14	26	51	12	25	17	3	3	7	5	18	16	2.94	0.88	...	28	...	S. E.
2	8	26	55	16	31	7	6	cd	8	7	15	13	2.32	0.60	...	15-16	6.2	S. E.
2	19	25	46	18	22	7	5	25	6	13	11	15	1.97	0.46	...	27	...	S. W.
g	19	27	45	18	37	y	5	4	4.2	13.0	12.8	5.5	1.01	0.52	14 00	27-28	...	...
2	20	n	45	14	24	7	7	ce	7	14	9	4	1.45	0.45	...	18	...	S.
2	19	27	49	18	30	2	...	...	...	...	...	...	...	...	...	...	...	...
g	25	p	50	25	37	y	7	30	2	12	16	5	0.77	0.39	...	27	2.5	N.
2	21	26	42	16	25	7	7	cf	4	15	11	5	0.56	0.26	...	28	0.3	S.
2	19	27	41	15	28	17	5	4	4	11	15	8	1.25	0.52	14 00	27-28	1.0	S. E.
g	-3	26	48	16	41	7	1	23	6.9	11.4	11.7	9.1	2.15	1.60	5 00	28	6.2	S. W.

Draper thermometer. † Report received too late to be used in computing means. The means P. M.) + 4. † Blank indicates that the duration is not shown in the original records, but is

17, 25; (k) 24, 25, 26, 27; (m) 23, 26, 27; (n) 20, 24, 26; (p) 23, 30; (q) 6, 9; (r) 1, 17; (s) 8, 12; 26, 26; (ac) 4, 19, 24, 26; (ad) 23, 28; (ae) 4, 8, 24; (af) 8, 24; (ag) 8, 20, 23, 25, 26; (bb) 16, 25;

## DAILY AND MONTHLY MEAN TEM

STATIONS.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<i>Western Plateau...</i>	49	53	43	35	38	43	43	46	43	40	49	43	42	37
<i>Alfred Centre.....</i>	49	50	39	32	35	43	42	44	45	37	43	42	39	35
<i>Angelica.....</i>	50	50	40	35	38	37	40	44	38	36	38	38	43	35
<i>Friendship.....</i>	48	49	48	35	40	42	39	44	42	43	41	40	42	36
<i>Humprey.....</i>	48	54	50	39	41	46	43	46	49	46	43	46	40	33
<i>Arkwright.....</i>	50	54	44	38	38	45	48	50	44	41	45	48	41	36
<i>Elmira.....</i>	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
<i>Le Roy.....</i>	49	51	45	37	37	41	43	46	48	35	40	44	44	41
<i>Mount Morris.....</i>	50	51	42	35	36	41	39	46	40	36	40	42	46	40
<i>Lockport.....</i>	50	56	48	40	39	46	49	46	44	40	39	46	44	39
<i>Victor.....</i>	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
<i>Wedgewood.....</i>	46	50	43	34	36	42	42	45	41	44	45	42	42	38
<i>Addison.....</i>	47	49	45	35	38	43	40	43	44	38	40	40	44	38
<i>South Canisteo.....</i>	50	48	41	38	36	42	38	46	43	37	40	38	42	37
<i>Araque.....</i>	50	53	42	34	38	43	42	46	45	38	42	43	40	36
<i>Varysburg.....</i>	53	56	44	34	40	49	46	49	45	43	47	48	45	39
<i>Italy Hill.....</i>	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
<i>Eastern Plateau...</i>	42	48	44	34	37	39	38	40	42	33	38	37	43	37
<i>Binghamton.....</i>	46	50	43	32	40	40	42	42	44	36	37	36	44	36
<i>Oxford.....</i>	42	50	44	31	40	38	37	40	42	31	41	36	42	35
<i>Cortland.....</i>	43	48	40	34	35	36	35	41	40	30	33	38	43	38
<i>South Kortright...</i>	42	48	42	30	40	35	40	39	39	30	35	34	43	34
<i>Brookfield.....</i>	44	49	43	33	38	38	33	36	41	32	42	36	42	34
<i>Middletown.....</i>	40	45	50	40	40	45	42	43	46	35	36	40	45	42
<i>Port Jervis.....</i>	39	42	48	38	40	43	39	40	46	34	36	36	45	39
<i>Cooperstown.....</i>	42	47	39	32	37	39	37	39	40	33	41	37	43	38
<i>New Lisbon.....</i>	38	49	45	30	37	38	36	39	41	32	42	36	44	36
<i>Perry City.....</i>	45	51	41	32	34	38	39	42	40	34	33	37	44	37
<i>Waverly.....</i>	44	52	46	34	36	43	36	43	46	37	37	42	42	36
<i>Minnewaska.....</i>	40	44	46	37	31	41	38	42	43	32	36	36	42	38
<i>Northern Plateau..</i>	40	46	42	32	32	38	39	40	40	33	37	38	41	38
<i>Lyon Mountain.....</i>	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
<i>Amersand.....</i>	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
<i>Gloversville.....</i>	35	45	41	33	34	40	38	37	42	32	33	37	39	40
<i>Constableville.....</i>	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
<i>Lowville.....</i>	42	50	44	33	32	40	38	40	40	37	38	37	42	40
<i>Number Four.....</i>	39	45	40	32	32	38	39	43	39	32	36	38	42	36
<i>Turin.....</i>	40	44	43	34	32	36	40	41	40	32	38	40	40	38
<i>Coast Region.....</i>	45	50	54	45	45	47	47	48	49	39	41	43	50	48
<i>New York City.....</i>	47	52	56	42	44	52	46	48	50	40	46	44	52	50
<i>Willet's Point.....</i>	44	50	50	47	48	43	47	48	45	38	38	42	48	44
<i>Brantwood.....</i>	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
<i>Betauket.....</i>	44	49	56	46	44	46	48	48	52	40	40	42	50	50
<i>Hudson Valley.....</i>	41	46	49	37	39	41	39	42	44	35	37	38	45	48
<i>Albany.....</i>	42	49	50	36	40	44	41	41	42	37	39	38	46	44
<i>Lebanon Springs.....</i>	38	44	48	34	36	38	37	41	42	34	38	36	42	39
<i>Honeynead Brook.....</i>	40	46	48	38	36	42	40	42	44	34	36	40	47	33
<i>Poughkeepsie.....</i>	40	46	50	38	40	42	39	40	44	.....	36	38	48	41
<i>Wappinger's Falls.....</i>	42	44	50	39	40	42	40	41	42	36	36	39	47	43
<i>West Point.....</i>	.....	.....	.....	.....	.....	.....	.....	.....	54	46	38	38	42	49
<i>Boyd's Corners.....</i>	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
<i>Stillwater.....</i>	40	50	49	35	38	40	33	38	39	34	36	38	42	41
<i>Roadout.....</i>	42	46	46	36	40	42	40	42	44	36	36	38	46	40
<i>Peekskill.....</i>	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
<i>Mohawk Valley.....</i>	38	48	56	40	35	39	41	43	46	40	44	42	45	41
<i>Rome.....</i>	38	43	56	40	35	39	41	43	46	40	44	42	45	41
<i>Champlain Valley.....</i>	38	44	52	38	34	42	38	41	38	29	28	36	42	43
<i>Plattsburgh Barracks.....</i>	38	44	53	38	34	42	38	41	38	29	28	36	42	43
<i>Glens Falls.....</i>	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

## STATE METEOROLOGICAL BUREAU.

241

TEMPERATURES FOR NOVEMBER, 1893.

15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	Monthly mean.
36	36	36	36	30	28	30	38	30	26	23	23	29	38	39	38	36.6
36	22	33	35	28	25	27	35	28	27	19	17	28	35	39	36	34.5
28	24	33	36	32	30	30	38	30	24	21	16	28	34	40	38	34.8
28	28	32	37	31	30	30	39	31	24	22	19	24	38	42	38	36.0
27	25	35	30	28	28	25	35	27	20	25	24	30	36	38	38	36.7
26	26	37	34	31	30	32	36	28	24	22	24	32	37	37	.....	37.2
29	29	39	34	30	30	33	41	32	27	27	28	31	37	38	36	37.2
29	.....	.....	36	32	30	32	40	32	28	25	28	32	40	41	40	37.4
30	28	40	40	28	29	33	33	33	28	26	26	29	40	34	36	38.1
32	26	36	36	32	27	25	39	28	26	22	22	28	38	38	40	36.2
34	29	38	40	34	29	30	41	35	29	26	26	30	42	42	44	37.7
30	24	32	38	32	28	28	40	32	26	24	30	28	40	41	40	35.8
28	24	33	34	28	26	28	38	29	23	21	30	30	36	38	36	35.4
28	27	35	36	28	31	33	40	30	28	23	26	32	38	36	38	38.2
32	27	35	38	31	27	27	39	34	28	25	23	28	42	40	40	35.7
34	27	40	40	31	26	26	40	36	30	26	28	38	44	42	42	37.1
32	26	35	38	33	27	27	38	36	29	26	23	26	42	38	38	35.5
30	27	37	38	33	27	29	38	32	28	26	24	32	40	40	38	35.3
30	24	32	36	28	24	18	38	30	25	30	20	24	42	38	39	33.3
27	22	33	30	29	22	28	33	30	25	23	17	25	34	36	36	33.0
36	29	34	.....	38	.....	42	37	32	30	28	30	46	46	46	44	39.3
36	30	34	42	28	25	27	41	36	32	30	28	30	44	42	40	37.1
30	25	34	39	31	26	29	39	35	27	22	18	26	42	40	40	34.9
28	26	34	38	30	25	26	40	36	27	22	23	25	42	40	38	34.7
34	26	36	38	33	27	28	39	32	27	24	22	28	41	39	40	35.5
34	29	41	40	32	32	28	44	33	28	26	26	29	44	44	44	37.5
34	26	32	39	30	28	27	35	34	28	22	22	26	40	36	41	34.9
31	25	31	36	28	25	24	35	32	24	18	12	21	39	36	36	33.0
31	28	30	38	30	28	26	40	34	26	24	19	23	40	37	37	34.1
34	25	33	38	30	26	24	32	34	26	16	10	18	38	35	36	33.5
29	22	31	33	26	22	24	35	30	22	16	9	23	40	34	33	32.0
29	24	30	35	28	24	23	34	31	21	16	11	20	38	36	36	32.5
39	32	41	49	37	36	38	46	42	34	33	32	39	48	45	46	43.0
38	34	42	50	38	36	40	50	44	34	32	32	38	50	47	45	44.0
36	28	41	46	38	34	39	46	39	32	32	33	42	46	44	44	41.7
42	34	41	50	36	37	35	48	43	36	35	32	37	49	45	47	43.4
36	32	37	44	35	32	29	42	39	38	32	25	28	46	42	41	38.3
35	32	37	43	36	34	32	41	38	33	28	24	26	46	44	41	39.0
36	28	33	40	32	29	25	39	37	36	24	20	24	45	40	38	35.8
33	32	36	40	32	30	24	41	36	34	29	22	29	48	40	38	37.2
37	33	40	45	33	34	28	44	39	36	33	27	28	48	44	42	39.1
36	32	39	46	36	31	30	43	39	34	32	29	30	48	44	42	39.0
42	36	38	50	38	36	32	46	46	38	41	30	30	47	41	40	40.7
37	30	36	41	34	34	30	39	39	32	28	22	28	44	44	45	37.4
36	32	38	44	37	32	30	40	38	32	32	26	30	46	40	40	38.2
40	32	28	41	29	32	30	34	41	31	23	19	21	33	41	38	37.0
40	32	28	41	29	32	30	34	41	31	23	19	21	33	41	38	37.0
36	30	37	40	31	30	30	34	38	31	22	18	28	36	38	37	35.2
36	30	37	40	31	30	30	34	38	31	22	18	28	36	38	37	35.2

## DAILY AND MONTHLY MEAN TEM

STATIONS.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<i>St. Lawrence Valley</i> .....	47	53	45	39	38	41	42	42	37	38	39	41	45	40
Malone.....	42	54	46	34	36	38	38	46	37	38	34	42	46	40
Madison Barracks..	46	54	48	40	40	40	44	42	43	33	37	42	46	43
Watertown.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Canton.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
North Hammond ..	49	50	51	48	41	50	44	40	37	40	46	37	44	40
Ogdensburg.....	48	54	41	40	39	39	45	36	35	42	45	46	39	.....
Potsdam*.....	49	54	41	63	35	37	38	38	34	29	34	41	42	38
<i>Great Lakes</i> .....	51	55	44	40	41	44	46	48	44	40	43	47	46	41
Dunkirk.....	54	57	46	40	41	45	50	50	45	42	45	48	44	38
Buffalo.....	54	60	46	40	40	49	52	50	47	42	46	50	46	40
Eden Centre.....	48	44	46	45	41	48	42	45	49	44	50	54	52	43
Brockport.....	.....	48	42	38	40	44	48	49	44	40	.....	47	45	42
Rochester.....	52	56	45	40	40	44	50	50	44	40	42	48	46	43
Fort Niagara.....	54	61	50	43	42	46	50	50	47	41	40	46	48	42
Hess Road Station.	50	56	46	40	40	43	42	46	42	36	40	42	47	41
Baldwinsville.....	50	56	41	37	41	40	40	44	38	38	41	45	44	40
Albion.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Oswego.....	48	54	46	38	36	42	43	45	43	38	42	45	47	40
Palermo.....	44	53	37	34	37	40	40	43	40	33	38	42	44	40
Lyons.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Erie, Pennsylvania..	54	59	42	41	42	46	53	53	50	42	46	50	44	39
<i>Central Lakes</i> .....	48	52	46	38	38	43	46	47	46	43	45	45	47	43
Fleming.....	47	53	53	36	36	40	42	45	44	43	45	46	47	40
Geneva.....	48	49	44	36	36	43	40	46	44	38	43	44	46	42
Watkins.....	50	53	50	48	48	48	52	56	57	50	55	52	50	49
Romulus.....	50	52	42	36	36	44	40	45	46	46	44	44	46	40
Ithaca.....	46	53	43	33	34	40	34	45	41	36	40	40	45	38
Monthly means.	48.9	49.4	47.5	37.8	37.7	41.7	41.3	43.7	42.9	36.5	39.4	41.0	44.6	40.8

\* Means of the tri-daily observations. † Mean of the maximum and minimum by the  
 inum and minimum of the ordinary self-registering thermometers. The means from the tri-  
 | Reports received too late to be used in computing averages.

## TEMPERATURES FOR NOVEMBER, 1893 — (Concluded).

15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	Monthly mean
33	28	40	38	33	32	35	39	35	29	21	18	27	40	35	34	36.7
33	24	34	37	28	27	30	38	34	24	18	12	28	40	34	33	34.3
36	34	41	38	36	34	37	40	38	33	26	20	30	40	40	38	36.6
34	28	39	47	38	43	37	37	37	32	23	20	22	38	39	39	39.0
30	29	43	34	31	29	37	43	35	25	20	21	34	42	36	30	37.1
30	26	43	32	31	28	34	38	33	31	16	19	27	40	33	28	34.4
32	30	40	39	32	32	35	40	32	29	27	25	32	41	39	37	38.9
28	29	39	40	34	24	35	39	32	30	27	27	27	36	39	35	39.6
29	30	41	35	31	32	38	41	32	28	26	23	35	43	40	34	40.0
42	35	40	39	27	30	34	23	22	25	28	25	29	37	37	38	38.8
31	29	40	39	39	30	34	43	.....	29	28	31	.....	.....	.....	.....	38.7
32	30	42	36	32	30	36	44	32	28	27	26	32	38	40	37	39.0
36	34	43	41	33	33	36	41	37	34	32	30	34	45	39	38	41.2
34	33	41	42	33	34	36	40	35	32	31	29	32	42	38	38	39.4
31	29	40	34	34	30	34	36	32	26	21	20	36	42	42	38	37.8
32	32	40	38	34	33	34	40	34	30	28	18	28	42	39	38	38.0
32	28	35	40	33	31	28	36	35	30	26	17	24	39	39	39	35.9
29	30	42	40	36	34	37	42	28	30	22	26	38	40	42	38	40.0
34	31	41	41	33	30	34	43	35	28	28	27	30	41	39	38	39.2
33	28	41	40	31	28	33	40	34	26	26	23	32	44	40	38	38.5
38	32	42	42	34	31	34	44	41	31	28	26	31	42	43	43	39.2
40	38	42	42	34	34	42	47	32	26	33	36	28	35	31	26	42.9
32	30	40	42	34	30	32	42	35	28	27	26	31	42	42	41	38.8
31	26	38	41	30	26	29	40	35	27	26	24	29	44	41	44	36.6
34.2	29.3	36.6	38.2	31.9	30.4	31.2	39.0	35.8	29.8	26.2	22.2	28.3	40.4	39.4	38.5	37.4

Dryer thermograph. Means for all stations not otherwise indicated are derived from the maximum daily observations are derived by the formula (7 a. m. + 3 p. m. + 9 p. m. + 9 p. m.) ÷ 4.



## DAILY AND MONTHLY PRECIP

STATIONS.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<i>Western Plateau..</i>	0.02	0.03	0.15	0.08	T.	0.00	0.00	0.00	0.00	0.00	0.00	T.	0.05	0.01
Alfred Centre.....														
Angelica.....		.18											T.	
Bolivar.....			.09										.06	
Friendship.....		T.	T.	T.									.04	
Humphrey.....													.06	
Little Valley.....														
Cherry Creek.....		.02	.85										.18	T.
Elmira.....														
Akron.....														
Le Roy.....	.15		.28										.06	
Avon.....														
Mt. Morris.....			.27										T.	
Lockport.....	.21	.07	.40										T.	T.
Victor.....														
Wedgewood.....			.15	.84										
Addison.....				.86	T.									
Atlanta.....			.18									.02	.11	
Pine City.....		.13	.33	.02										
South Canisteo.....			.15	.20									.06	
Arcade.....	.02		.11										.05	T.
Attica.....														
Castile.....														
Varysburg.....	.06	.09	.27										.13	
<i>Eastern Plateau..</i>	0.00	0.01	0.19	0.35	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	T.
Binghamton.....			.13	.22									T.	
Chemango Forks.....														
Oxford.....		T.	.37	.30									.05	
Cortland.....			.33	.33										
Bovina Centre.....			.23	.70									.15	
Depost.....														
South Kortright.....				.18										
Brookfield.....		.02	.26	.02									T.	
Apulia.....														
Middletown.....			.09	.72										
Port Jervis.....			.15	.80	.15								.02	.06
Warwick.....			.04	.93	.09								.06	
Cooperstown.....			.45	.22										
New Lisbon.....		.06	.94	.21										
Perry City.....		.03	.18	.04										
Liberty.....														
Newark Valley.....			.25	.25										
Waverly.....			.18	.30									T.	
Ellis.....			.16	.84	.02									
Minnewaska.....	T.			.55										
<i>Northern Plateau.</i>	0.00	0.01	0.25	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.01
West Chazy.....													T.	
Keene Valley.....														
Ampersand.....														
Gloversville.....		.08	.29	.15									.02	
Blue Mt. Lake.....														
Constableville.....														
Lowville.....			.27										.05	
Number Four.....			.30										.12	
Turin.....			.36										.16	
Boonville.....			.42										.10	
Galway.....														
King's Station.....		.05	.10	.18										
<i>Coast Region</i>	0.00	0.00	0.01	1.16	0.22	0.00	0.00	0.04	0.05	0.00	0.00	0.00	0.02	T.
New York City.....			.04	1.19	.31			T.	.12				.02	T.
Willet's Point.....				1.37				.15						
Brentwood.....														
Setauket.....			T.	1.35	.18				.07				T.	T.
Bedford.....			.05	.74	.41								.11	

## STATE METEOROLOGICAL BUREAU.

245

TATION FOR NOVEMBER, 1893 — (INCHES).

15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	Total.
0.18	0.16	0.05	0.11	0.04	0.02	0.08	0.11	0.08	0.10	0.10	T.	0.14	0.40	0.24	0.06	2.23
.15	T.			.10		.05	.25	T.	.25	.40		*	↑.42	.23	.09	2.98
.01	.56		.16		.08	.05	.04	.07	.07	.05		.08	.51	.04		1.83
	.16	T.	.14	.01	.10	.10	T.	T.	.20	.40	T.	.08	.58	.20	.10	2.13
1.30		.20				.30	.02		.15	.20		.15	.18	.10		2.56
.30	1.25	.01	.17	.06	.05	.11	.58	.06	.53	.18	.02	.06	.56	.20	.26	4.91
.01			.15		.06		.05	.16	.02	.02			.45	.02	.30	1.75
	T.	.25	.14	.10		.10							.32	.12	.04	1.10
						.10	.45		T.	T.		.57	.30	1.00	T.	3.34
T.	T.		.15	T.		.20	T.		.06	.06		.15	.51	T.		1.60
	T.		.08	T.		.02	.02		T.	.02		.02	.77	T.		1.24
	.02	.21	.02			T.			T.	.02			.58	.11		1.27
			.14		.03		T.		T.	T.			.94			1.69
.10	.20		.15	.06		.12	.02	T.	.06	.07		.80	T.	.04		2.03
.35	.15		.11	.12	T.	.07	.10	.06	.20	.06		.06	.29	.18	.04	1.95
.60	T.	.93	.34	.10		.12	.15	.06	T.			.06	.60	.40	.14	3.27
0.14	0.05	T.	0.05	0.01	0.01	0.20	0.10	0.02	0.03	0.03	T.	0.06	0.54	T.	0.01	1.87
.13			.10	.02	T.	.08	.06	T.	.05	T.			.59			1.88
.15	T.		.11	T.	T.		.20		T.				.50	.04		1.72
.10	.07		.08		.04	.06	.15		.05	.03			.65			1.94
.29	.30					.70	.15		.05	.40			.79			3.56
.10	.20		T.	T.	.10	.10	.05	T.	.20			.01	.05			1.10
																1.11
.26		.04				*	.45	.27	T.				.76	T.		2.59
.33						.55	.33						1.10		.03	3.47
.40			.03	.04		.49							1.14			3.18
.25	.25		.14			.32	.05		.05			.45	.01			2.20
T.	.01			.08		.08	.05		.01	.02	.23	.02	.34	T.		0.95
						.14		T.	.11	.01		.02				0.91
.12			.04	.05	.02	.02		T.				T.				0.75
.18			.08	T.		T.	.03				T.	.25	.59			1.61
			.11	T.	.07	.05	.10		T.			.04	.43	.08	.04	1.89
					.70							.80				2.05
0.30	0.00	T.	0.14	0.00	0.13	T.	0.45	0.06	0.19	0.01	0.00	T.	0.46	0.23	0.26	2.57
.07	T.		T.		.08	T.	.42	T.	T.	T.			.17	.23	.18	1.09
.06	.11	T.	.06		.03	T.	.35		T.	T.		T.	.25	T.		1.84
.23			.37		.14		.53	.10	.37				.83		.37	3.75
.61			.18		.27		.08		.53	.10			.68	.69	.39	3.60
.55			.26		.36		.74	.21	.27	T.			.41	.43	T.	3.90
.60			.16		.09		.54		.16				.56		.38	3.14
							.46						.36			1.35
0.33	0.00	0.00	0.01	T.	0.00	0.01	0.32	0.00	0.00	0.00	0.00	0.00	0.78	0.00	0.00	3.45
.42			T.			.06	.90		.65				.65			3.71
							.94		.60				.60			3.06
.47			T.	T.		T.	.71						.47			3.25
.40			.06				.71						1.31			3.78

## DAILY AND MONTHLY PRECIPITA

STATIONS.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<i>Hudson Valley</i> .....	0.00	0.00	0.04	0.84	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
Albany .....			.02	.06	T.									
Bethlehem Centre .....														
Lebanon Springs .....			.10	.18	.08								T.	
Honeymead Brook .....			.09	.82	.02								.01	
Pawling .....														
Poughkeepsie .....			.05	.37	.05								T.	
Wappinger's Falls .....			.06	.43	.11								.02	
West Point .....				1.10									.04	
Boyd's Corners .....														
Carmel .....														
South E. Reservoir .....														
Schodack Depot .....														
Stillwater .....			.08	.10									T.	
Rondout .....				.50										
Easton .....														
<i>Mohawk Valley</i> ....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07
Rome .....														.07
<i>Champlain Valley</i> ..	0.00	0.00	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00
Plattsburgh Barracks .....			.26										.06	
Port Henry .....														
Glens Falls .....														
Whitehall .....														
<i>St. Lawrence Val'y</i> ..	0.02	0.00	0.28	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.02	0.04
Malone .....			.18										.08	T.
Madison Barracks .....			.40											*
Watertown .....														
Canton .....														
DeKalb Junction .....			.40										.06	
North Hammond .....	.10		.80										.06	.05
Ogdensburg .....			.23											
Potsdam .....			.25											.16
<i>Great Lakes</i> .....	0.07	0.10	0.20	T.	0.00	0.00	0.00	0.00	T.	0.00	T.	0.00	0.05	0.08
Dunkirk .....	.02		.27										.17	.07
Buffalo .....	.10	.02	.32						T.				.08	.03
Eden Centre .....	.22	.55											.1	.80
<i>Adams Centre</i> † .....														
Brockport .....	.08												T.	.01
Rochester .....	T.	.06	.22	T.									.01	.01
Fort Niagara .....	.30	.14						.30						.05
Hess Road Station .....	.08		.31								.01		.08	.05
Baldwinsville .....	.08	.14											.08	T.
Albion .....														
Lyndonville .....														
Demster .....		.05	.80										.07	.07
Oswego .....		.08	.28										.08	T.
Palermo .....		.18	.35											
Phoenix .....		.10	.32											.06
Lyons .....														
Erie, Pa. ....	T.		.17										.12	
<i>Central Lakes</i> .....	0.00	0.08	0.07	0.08	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.09	T.
Fleming .....		.30											.30	
Geneva .....														
Watkins .....			.10			.08								
Romulus .....			.08	T.									.07	
Ithaca .....			.10	.32										T.
Penn Yan .....														
Average .....	0.01	0.02	0.14	0.22	0.08	T.	0.00	T.	T.	0.00	T.	T.	0.04	0.02

\* Amount included in next measurement.

† Not used in computing the averages.

‡ Record

## TION FOR NOVEMBER, 1893 — (Concluded).

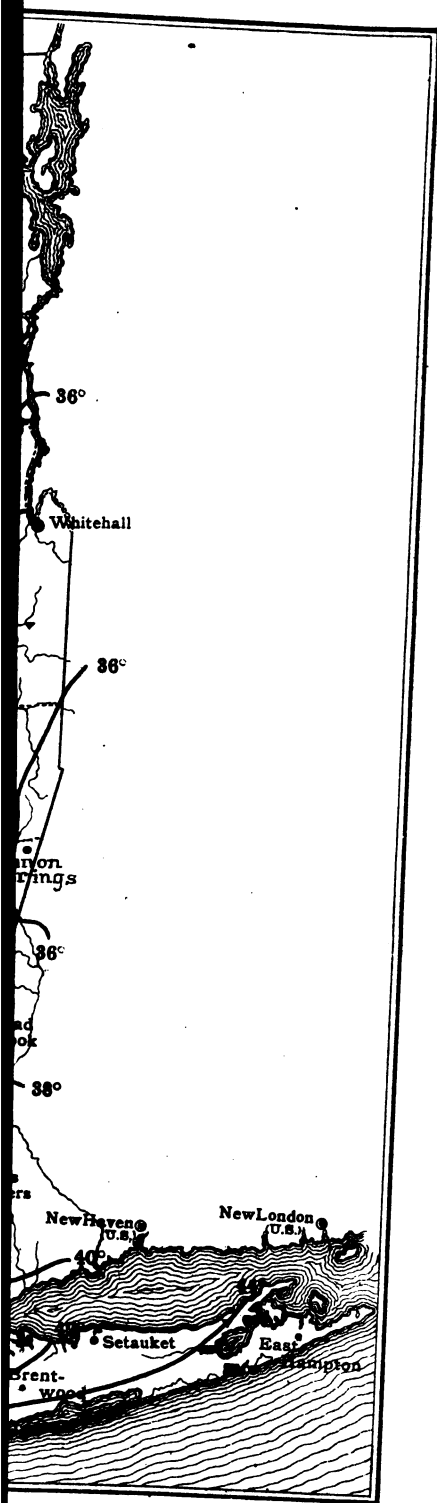
15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	Total.
0.15 .16	T. T.	T.	0.02 .08	0.01 .08	T. T.	0.01 T.	0.28 .16	T.	T. T.	T. T.	0.00	0.00	0.87 .48	0.00	T. T.	1.90 0.91
.21	.02		.11		.08		.43		.03				.86			2.00
.24		.02		.03		.08	.39						.79			1.94
.32		T.	.08	.04		T. .06	.45 .38		T. T.				.87 1.60			1.88 3.04
.26							.74						1.50			2.63
.06						T.	.02	T.					.26			0.53
.10						*	.50 +.71						1.90 .35			2.20 1.16
0.00 .43	0.43 .43	0.00	0.00	0.59 .59	0.00	0.11 .11	0.00	0.18 .18	0.07 .07	0.06 .06	0.19 .12	0.06 .06	0.00	0.23 .23	0.18 .18	2.10 2.10
0.04 .04	0.00	0.00	0.05 .05	0.08 .08	0.00	0.00	0.18 .18	0.00	0.00	0.00	0.00	0.00	0.28 .28	0.38 .38	0.00	1.23 1.23
0.06 .11 +.12	0.00	0.00	0.01 .07	0.04 T. .20	0.08 .08 .12	0.10 .08 .21	0.10 .04	0.12 .08	0.01 .03	T. T.	0.00	0.19 T. .41	0.62 .30 .72	0.19 .13 .29	0.27 .50 .26	2.16 1.45 2.74
.10						.02 .10	.08 .45	.61	.01				.53 .24 *	.23 .28 *	.61 +.65	2.55 2.26 1.88 2.05
.10						.24							1.30			
0.30 1.20 .23 1.00	0.14 T. .23 1.00	0.04 T. .10	0.08 .13 .10 .45	0.06 .06 .04 .50	0.04 .04 .10	0.13 .08 .10 .10	0.17 .12 .40 .10	0.09 .05 .01 .20	0.06 .01 .02	0.04 T. T.	T. T.	0.27 .13 .61 .45	0.26 .20 .16 .10	0.40 .37 .37 .35	0.10 .08 .08 .46	2.58 2.86 2.68 5.59
T. T.	T. T.		.07 .08	.04 .08	.06 .17	.06 .09 .06	.10 .11 .08	.26	.01 .06	.04 T.		.12 .37 .43	.19 .22 .22	.86 .30 1.45		1.00 1.93 2.43 2.86 2.11
T. T.	T. T.	.08 .10	T. .10	.04 .09	T. T.	.16 .12	.17 .11	.08	.19	.16		.29 .17	.35 .12	1.19 .25	.09	
.21 .30 .60	.07 T. .60		.62 .08	.04 .06	.04	.05 .07 .55	.62 .44 .22	.16 .15 .22	.14 .16 .12	.02 .02		.04 .10	.08 .08	.22 .01	.17	3.06 2.94 2.82
.30 .18	.22 .06	.06	.10	.02		.20	.08	.06	.16	.08		.46	.06	.20	.04	1.83 1.97
T. T.	T. T.	0.00	0.12 .45	T. T.	T. T.	0.08 T.	0.07 T.	T.	0.01 T.	0.24 T.	T.	0.01 T.	0.88 .40	T.	0.00	1.01 1.45
						*	+.15		.10		*	+.39				0.77
T. T.	T. T.		.04 T.	T. T.	T. T.	T. T.	.11 .10	T. T.	.05 T.	.84 T.	T.	.06 T.	.26 .47	T. T.		0.56 1.25
0.14	0.06	0.01	0.06	0.08	0.02	0.07	0.24	0.06	0.06	0.06	0.01	0.07	0.46	0.17	0.09	2.12

for the month incomplete. | Reports too late to be used in computing the averages. T—Trace.

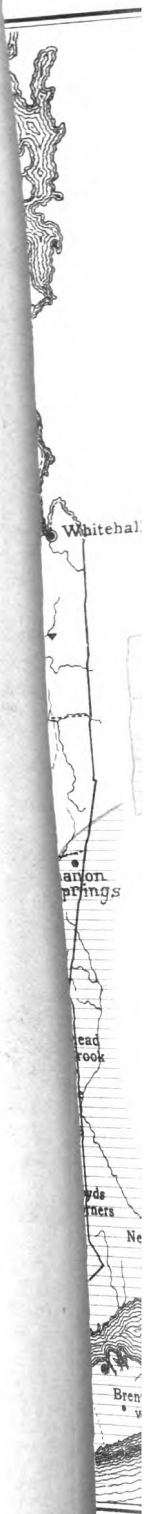
## TEMPERATURE AND

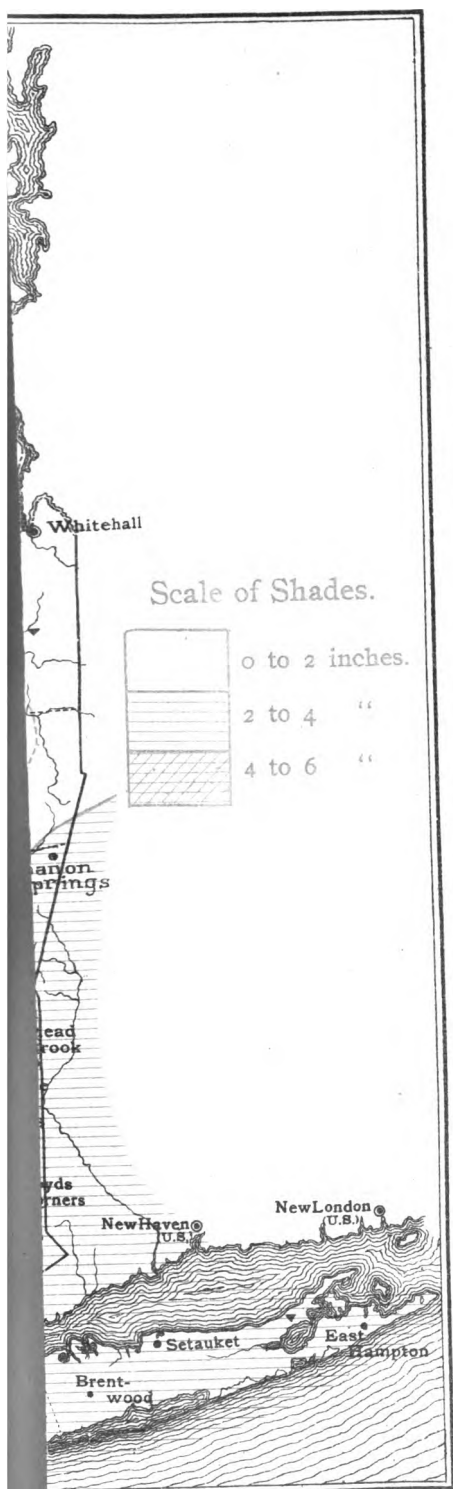
STATIONS.	County.	TEMPERATURE — (DEGREES FAHR.).							EXTREMES OF MONTHLY MEAN TEMPERATURE, NOVEMBER.		
		Normal for the month of November.	Length of record, years.	Record begins.	Record ends.	Mean for November, 1893.	Departure from the normal.	Highest.	Year.	Lowest.	
<i>Western Plateau.</i>		36.7				36.0	+0.6				
Angelica*	Allegany	34.9	9	1854	1893	34.8	-0.1	38.1	1899	30.6	36°
Humphrey	Cattaraugus	36.2	11	1883	1893	37.2	+1.0	39.8	1899	30.2	
Elmira*	Chemung	39.0	13	1852	1891						
<i>Eastern Plateau.</i>		36.0				36.2	+0.2				
Cooperstown	Otsego	34.9	40	1854	1893	34.9	0.0	38.5	76-'77	26.8	
Waverly	Tioga	37.2	11	1882	1893	37.5	+0.3	40.0	1888	35.0	
<i>Northern Plateau.</i>		34.1				33.5	-0.6				
Lowville	Lewis	34.1	27	1827	1893	33.5	-0.6				
<i>Coast Region.</i>		43.4				43.7	+0.3				
New York City	New York	43.4	23	1871	1893	44.0	+0.6	46.9	1899	37.2	36°
Setauket	Suffolk	44.3	9	1885	1893	43.4	-0.9	46.3	1899	42.0	Wahli
<i>Hudson Valley.</i>		40.3				38.8	-1.5				
Albany	Albany	39.3	20	1874	1893	39.0	-0.3	44.0	1883	32.2	
Honeymead Brook	Dutchess	38.6	10	1884	1893	37.2	-1.4	41.8	1888	36.5	
Poughkeepsie*		41.0	22	1828	1893	39.1	-1.9				
West Point	Orange	42.2	63	1824	1893	40.7	-1.5	49.9	1890	33.8	
Rondout*	Ulster	40.6	24	1828	1893	38.2	-2.4	50.3	1849	37.1	
<i>Champlain Valley.</i>		34.6				35.2	+0.6				
Plattsburgh Barracks	Clinton	34.6	36	1839	1893	35.2	+0.6	43.5	1849	25.3	
<i>St. Lawrence Valley.</i>		35.0				37.3	+2.3				
Madison Barracks	Jefferson	37.6	31	1829	1893	38.6	+1.0	46.1	1849	40.4	
Canton*	St. Lawrence	34.3	31	1862	1892			38.8	1863	25.6	
North Hammond	"	34.6	16	1866	1893	39.0	+4.6	39.1	1870	25.5	
Potdam*	"	33.7	25	1828	1893	34.4	+0.7	40.4	1830	30.4	
<i>Great Lakes.</i>		33.0				33.8	+0.8				
Buffalo	Erie	38.1	23	1871	1893	40.0	+1.9	43.5	1888	30.2	
Rochester	Monroe	37.4	23	1871	1893	39.0	+1.6	40.6	1883	26.6	
Fort Niagara	Niagara	39.7	26	1829	1893	41.2	+1.5	47.5	1849	31.6	
Baldwinsville	Onondaga	37.8	18	1849	1893	37.3	-0.5				
Oswego	Oswego	36.8	23	1821	1893	38.0	+1.2	42.8	1877	32.0	Mon. Kings
Palermo	"	34.6	40	1854	1893	35.9	+1.3	41.9	1859	28.7	
Lyons	Wayne	38.7	5	1890	1892						
Erie, Pennsylvania	Erie	40.8	20	1874	1893	40.0	-0.8	44.0	1883	34.0	
<i>Central Lakes.</i>		38.6				37.9	-0.7				
Geneva	Ontario	39.0	17	1854	1893	39.2	+0.2				
Ithaca	Tompkins	38.2	15	1879	1893	36.6	-1.6	40.4	1883	33.1	36°
Average departure ..							+0.2				

\* Location of the instruments has been changed.



PAHLEE COWN LONS E AEE VEE CES MONE CHIE PCHIC









## FALL STATISTICS FOR NOVEMBER, 1893.

STATIONS.	County.	RAINFALL (INCHES).									
		Average for the month of November.	Length of record, years.	Record begins.	Record ends.	Total for Nov. 1893.	Departure from the average.	EXTREMES OF MONTHLY PRECIPITATION FOR NOV.			
								GREATEST.		LEAST.	
								Amount.	Year.	Amount.	Year.
<i>Western Plateau</i> .....		2.71	.....	.....	.....	2.34	-0.78	.....	.....	.....	.....
Angelica.....	Allegany.....	2.64	7	1871	1893	2.12	-0.52	4.27	1889	1.64	1871
Humphrey.....	Cattaraugus.....	3.61	11	1883	1893	2.56	-1.05	6.23	1886	2.29	1887
Elmira.....	Chemung.....	1.89	15	1852	1891	.....	.....	.....	.....	.....	.....
<i>Eastern Plateau</i> .....		2.72	.....	.....	.....	2.43	-0.30	.....	.....	.....	.....
Cooperstown.....	Otsego.....	3.06	40	1854	1893	2.20	-0.86	5.38	1858	1.45	1876
Port Jervis.....	Orange.....	2.74	9	1880	1893	3.47	+0.73	5.07	1892	1.12	1883
Waverly.....	Tioga.....	2.37	11	1882	1893	1.61	-0.76	5.90	1889	0.91	1883
<i>Northern Plateau</i> .....		3.19	.....	.....	.....	3.75	+0.56	.....	.....	.....	.....
Lowville.....	Lewis.....	3.19	25	1827	1893	3.75	+0.56	.....	.....	.....	.....
<i>Coast Region</i> .....		4.17	.....	.....	.....	3.48	-0.69	.....	.....	.....	.....
New York city.....	New York.....	3.82	23	1871	1893	3.71	-0.11	9.82	1889	1.65	1883
Setauket.....	Suffolk.....	4.52	9	1885	1893	3.25	-1.27	8.22	1892	0.74	1890
<i>Hudson Valley</i> .....		3.47	.....	.....	.....	2.17	-1.23	.....	.....	.....	.....
Albany.....	Albany.....	2.90	20	1874	1893	0.91	-1.99	5.40	1886	0.91	1893
Honeynead Brook.....	Dutchess.....	3.30	10	1884	1893	1.94	-1.36	4.87	1889	0.80	1890
West Point.....	Orange.....	4.01	49	1840	1893	3.63	-0.38	10.02	1846	1.00	1890
Boyd's Corners.....	Putnam.....	3.76	9	1866	1891	.....	.....	8.01	1889	1.12	1890
Rondout.....	Ulster.....	3.38	23	1829	1893	2.20	-1.18	7.55	1842	0.67	1890
<i>Champlain Valley</i> .....		2.32	.....	.....	.....	1.28	-1.04	.....	.....	.....	.....
Plattsburgh Barracks.....	Clinton.....	2.32	34	1840	1893	1.28	-1.04	4.39	1885	0.54	1882
<i>St. Lawrence Valley</i> .....		2.81	.....	.....	.....	2.12	-0.68	.....	.....	.....	.....
Malone.....	Franklin.....	2.74	14	1830	1893	1.45	-1.29	.....	.....	.....	.....
Madison Barracks.....	Jefferson.....	3.07	32	1840	1893	2.74	-0.33	10.02	1889	1.27	1870
North Hammond.....	St. Lawrence.....	3.26	16	1866	1 93	2.26	-1.00	6.78	1866	1.73	1874
Potsdam.....	".....	2.16	24	1828	1893	2.05	-0.11	4.10	1889	0.17	1836
<i>Great Lakes</i> .....		3.35	.....	.....	.....	2.37	-0.98	.....	.....	.....	.....
Buffalo.....	Erie.....	3.58	23	1871	1893	2.63	-0.95	6.05	1887	2.09	1875
Rochester.....	Monroe.....	2.88	23	1871	1893	1.93	-0.95	5.46	1877	0.80	1887
Fort Niagara.....	Niagara.....	2.42	38	1841	1893	2.42	0.00	4.82	1842	0.54	1887
Oswego.....	Oswego.....	3.32	23	1871	1893	2.94	-0.38	6.45	1880	1.78	1873
Palermo.....	".....	3.66	33	1860	1893	2.32	-1.34	6.60	1866	1.01	1882
Erie, Pennsylvania.....	Erie.....	4.26	20	1874	1893	1.97	-2.29	8.35	1879	2.51	1874
<i>Central Lakes</i> .....		2.54	.....	.....	.....	1.25	-1.25	.....	.....	.....	.....
Geneva.....	Ontario.....	2.58	23	1850	1892	.....	.....	4.68	1857	0.33	1867
Ithaca.....	Tompkins.....	2.50	15	1879	1893	1.25	-1.25	6.03	1886	1.25	'80-'93
Average departure....		.....	.....	.....	.....	.....	-0.77	.....	.....	.....	.....

during the period covered by the record.

## Meteorological Summary for December, 1893.

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The average atmospheric pressure (reduced to sea-level and 32 degrees Fahr.) for the State of New York during December was 30.11 inches. The highest barometer was 30.92 inches at Albany on the fourteenth, and the lowest was 29.27 inches at Buffalo on the sixteenth. The highest mean pressure, 30.14 inches, obtained at New York city, the values decreasing toward the north and west. The average of the mean pressures at six stations of the National Bureau was 0.05 inches above the normal.

The mean temperature for the State was 25.4 degrees; the highest general daily mean, 45.7 degrees, occurring on the twenty-fifth, and the lowest, 6.0 degrees, on the thirteenth. The highest local monthly mean was 36.1 degrees at Setauket, L. I.; and the lowest was 15.8 degrees at Malone and Potsdam. The maximum temperature reported during the month was 65 degrees at Plattsburgh Barracks on the twenty-third and twenty-fourth, and the minimum was 31 degrees below zero at Saranac lake on the thirteenth. The mean monthly range of temperature for the State was 61 degrees; the greatest range, 83 degrees, occurring at Plattsburgh Barracks, and the least, 46 degrees, at Fort Niagara. The mean daily range for the State was 18 degrees; the maximum value being 51 degrees at Ogdensburg on the twenty-fifth, and the minimum 0 degrees at

Madison Barracks on the seventeenth. The mean temperatures of the various sections of the State were as follows: The Western plateau, 26.9 degrees; the Eastern plateau, 26.6 degrees; the Northern plateau, 19.8 degrees; the Coast region, 34.7 degrees; the Hudson valley, 27.8 degrees; the Mohawk valley, 23.6 degrees; the Champlain valley, 21.2 degrees; the St. Lawrence valley, 18.4 degrees; the Great Lake region, 27.3 degrees; and the Central Lake region, 28.0 degrees. The average of the mean temperature at twenty-five stations possessing records for previous years was 1.1 degrees below the normal. Excesses of temperature were reported only from six stations near the southern borders of the State and at Fort Niagara.

The mean relative humidity was 78 per cent. The dew point was 23 degrees.

The average precipitation for the State was 3.87 inches of rain and melted snow. The heaviest general precipitation, somewhat exceeding 6 inches, occurred over small portions of the Northern and Western Plateaus; while the least amount (less than 2 inches) fell in the vicinity of the Central lakes. The greatest local monthly precipitation was 6.93 inches, at Turin, Lewis county; and the least was 1.47 inches at Ellis, Tompkins county. Data upon heavy rates of precipitation will be found in the table of meteorological data. The first heavy precipitation, and the maximum for the month, occurred on the third, the average for the State on that day being 0.71 inch, over 1 inch falling in eastern New York. On the twenty-fifth the average for the St. Lawrence valley was 1.00 inch, and for the State 0.50 inch. The total snowfall averaged about 18 inches for the entire State. The total fall over the Central plateaus averaged about 20 inches, and over the Northern

plateau about 30 inches. The totals for other regions were (approximately): Coast region and Central Lakes, 10 to 12 inches; Hudson and Champlain valleys, 15 to 18 inches; and the St. Lawrence valley and Great Lakes, 20 inches. The maximum local snowfall was 43 inches at Turin, Lewis county. The average total precipitation at twenty-four stations possessing records for previous years was 0.92 inches above the normal amount. The only deficiencies occurred at Albany, West Point, Palermo, Ithaca and Erie, Pa.

The average number of days on which the precipitation amounted to 0.01 inch or more was 14.1. The maximum number occurred over the eastern highlands, the Great Lake region and northern New York, and the minimum in the Coast region, the Champlain valley and the vicinity of the Central lakes. The average number of clear days for the State was 3.6; of partly cloudy days, 10.8; and of cloudy days, 16.6; giving an average cloudiness of 67 per cent. The greatest amount of cloud obtained over the eastern, central and northern sections, and the region of the Great Lakes; and the least near the Atlantic coast.

The prevailing wind direction was from the southwest. The average total wind travel at six stations of the National Bureau was 9,052 miles, somewhat exceeding the usual values for the month in all regions. The maximum velocity recorded was 58 miles per hour at Buffalo on the sixteenth.

A thunderstorm passed over the southwestern and central counties on the evening of the twenty-fifth; and a storm (apparently distinct from the former) appeared in the St. Lawrence valley about the same time.

Hail fell on the third, at Wappinger's Falls, South Canisteo and Perry City; on the fifth, at Setauket; on the ninth, at S.

Canisteo; on the fifteenth, at Honeymead Brook and Waverly; on the twenty-fifth, at Turin and Eden Centre; and on the twenty-eighth, at Setauket. Sleet was reported on the first, third, ninth, tenth, twelfth, thirteenth, fifteenth, sixteenth, twenty-third and twenty-eighth.

A solar halo was observed on the fourteenth; and lunar halos on the nineteenth, twentieth, twenty-first, twenty-fourth and thirtieth.

During December the weather of New York was influenced by nine areas of high and thirteen areas of low pressure; the latter being about the average number of depressions recorded for December of previous years. The areas of high and low pressure in general followed the usual paths of atmospheric movements in winter; many of the storms, however, traveling much more rapidly than usual. Centers of depression passed eastward over Canada, on the fifth, tenth, sixteenth, nineteenth, twentieth, twenty-third and twenty-eighth. The storms of the sixteenth and nineteenth, which were the most severe of this series, moved down the St. Lawrence valley, close to the border of New York, accompanied by high winds in the western section; the disturbance of the sixteenth also giving a heavy general precipitation. On the first, third, twelfth, and twenty-fifth, centers of depression passed directly over the State; and storm areas also moved northeastward along the Atlantic coast on the fifth and thirtieth, the former being sharply defined, and attended by gales and a heavy fall of rain and snow on the seaboard. The maximum precipitation for the month accompanied the severe storm which traversed northern New York on the third, falling for the most part as snow.

Anticyclonic areas passed over New York and its vicinity on and about the second, fifth, eighth, thirteenth, twentieth, twenty-second, twenty-seventh, thirtieth and thirty-first. All of these areas, excepting that of the twenty-second, depressed the temperature below the normal; and thus the weather was colder than usual at the season during nearly the entire period from the first to the twentieth, the deficiency amounting to nearly 20 degrees of mean daily temperature on the fifth and thirteenth. A series of four depressions passing over Canada and northern New York after the twentieth, and a general decrease of pressure toward the north, gave southerly winds and unseasonably warm weather; notably on the twenty-fifth, when the average temperature of the State was 20 degrees above the normal. Sharp but brief cold waves occurred on the twenty-sixth and thirtieth, mild weather prevailing between those dates.

The precipitation occurred mainly during the first or cold period of the month, in the form of snow, which, however, was rapidly melted by the warming due to the advance of succeeding storms, excepting in the northernmost counties where the ground was sufficiently covered for good sleighing throughout the month. Several freshets occurred in the central and southern sections, notably on the fifteenth and sixteenth, when a considerable damage to property was sustained along the tributaries of the Susquehanna river. Both the number of rainy days and the amount of cloudiness were above the average for previous Decembers.

The many sudden changes from freezing to thawing occasioned some damage to winter crops, and also the snow covering was insufficient as a protection during the severe cold waves of

the fifth and thirteenth. In spite of these adverse conditions, grass and winter grains generally were reported as in a fairly satisfactory condition. Plowing was carried on in the southern tier of counties during the last week of December; the weather then being so warm that dandelions blossomed in sheltered localities.



LOCATION OF STATIONS.			BAROMETER.						HUMIDITY.		TEMP.		
STATIONS.	County.	Elevation, feet.	Mean.	Highest.	Date.	Lowest.	Date.	Monthly range.	Mean relative.	Dew point (degrees).	Mean of tri-daily observations.	Mean of maximum and minimum.	Highest.
<i>Western Plateau.</i>													
Alfred Centre	Allegany	1824											26.9 64
Angelica		1340									27.0		25.4 54
Friendship	"	1550	30.12	30.78	13	29.48	16	1.30			27.8		27.3 57
<i>Central Plateau.</i>													
Humphrey	Cattaraugus	1950									27.6		27.8 57
Arkwright	Chautauqua	1260											
Elmira	Chemung	863											
Le Roy	Genesee	888											25.5 57
<i>Adirondack Plateau.</i>													
Mt. Morris	Livingston	625											27.1 64
Lockport	Niagara	616											25.7 55
Victor	Ontario	650											
<i>Allegheny Plateau.</i>													
Wedgewood	Schuyler	1350									25.6	26.0 61	
Addison	Steuben	1000									29.2	29.5 59	
South Canisteo	"	1480									27.7	28.3 58	
<i>Wyoming Plateau.</i>													
Arcade	Wyoming	1557									25.5	25.9 56	
Varysburg	"											26.4 61	
Italy Hill	Yates	1650											
<i>Eastern Plateau.</i>													
Binghamton	Broome	870									28.5		26.6 62
Oxford	Chenango	1250											27.5 58
Cortland	Cortland	1120											26.2 55
													*25.4 52
<i>Delaware Plateau.</i>													
South Kortright	Delaware	1700											26.0 55
Brookfield	Madison	1350									25.3	23.4 54	
Middletown	Orange	660							78	23	30.6	29.3 58	
<i>Port Jervis Plateau.</i>													
Port Jervis	"	470											28.7 56
Cooperstown	Otsego	1300									24.8	24.9 55	
New Lisbon	"	1234									24.9	25.4 57	
<i>Ulster Plateau.</i>													
Perry City	Schuyler	1038									25.8	25.8 58	
Waverly	Tioga	825									28.8	28.6 62	
Minnewaska	Ulster	1800									26.9	27.5 54	
<i>Northern Plateau.</i>													
Lyon Mountain	Clinton	1917											19.8 57
Keene Valley	Essex												
Amersand	Franklin	1600											
<i>Adirondack Plateau.</i>													
Saranac Lake	Franklin												16.7 47
Gloversville	Fulton	802									21.7	22.1 50	
Blue Mountain Lake	Hamilton												
Constableville	Lewis	1246											
<i>Lowville Plateau.</i>													
Lowville	Lewis	900											20.8 57
Number Four	"	1571	30.10	30.86	14	29.50	16	1.36					19.5 47
Turin	"	1240											19.9 49
<i>Coast Region.</i>													
New York City	New York	164	30.14	30.89	14	29.44	16	1.45	74	27			24.7 63
Willet's Point	Queens												35.1 68
Brentwood	Suffolk	75									38.5	34.1 61	
Setauket	"	40							72	27	35.2	33.6 60	36.1 61
<i>Hudson Valley.</i>													
Hudson Valley													27.8 60
Albany	Albany	85	30.13	30.92	14	29.44	16	1.48	81	21			26.0 54
Lebanon Springs	Columbia	880											25.1 53
Honeymead Brook	Dutchess	450									27.6		27.9 55

## STATE METEOROLOGICAL BUREAU.

257

FOR DECEMBER, 1893.

PERATURE — (IN DEGREES FAHR.).										SKY.		PRECIPITATION — (INCHES).					WIND.	
Date.	Lowest.	Date.	Monthly range.	Mean daily range.	Greatest daily range.	Date.	Least daily range.	Date.	Number of clear days.	No. of partly cloudy days.	Number of cloudy days.	Number of days on which 0.01 or more inches fell.	Total.	Greatest rainfall.	Duration. †	Date.	Total snow fall.	Prevailing direction.
24	— 5	5	56	17	40	26	2	n	1.4	10.4	19.2	16.6	3.62	1.26	H. M.	15	...	...
25	— 5	5	49	15	35	26	4	31	0	8	23	7	3.13	0.81	...	16	18.0	S. W.
25	— 2	5	62	16	33	26	8	p	1	14	16	20	3.53	0.65	...	3	19.5	S. W.
25	— 2	5	60	18	39	26	7	22	1	14	16	19	3.51	0.69	...	3	16.5	W.
25	8	13	49	16	33	26	7	31	0	5	26	19	5.74	0.73	...	15	31.0	S. W.
25	3	4	54	13	27	5	2	n	2	11	18	22	6.43	...	...	...	30.0	W.
24	— 3	5	67	21	31	27	7	30	1	9	21	13	2.09	0.63	...	3	...	W.
25	— 5	5	50	14	27	8	6	22	0	9	22	14	4.77	1.26	...	15	17.0	S. W.
25	3	c	58	20	40	26	7	22	1	20	10	11	1.71	0.40	...	3	12.0	S. W.
25	3	5	56	17	34	26	8	31	6	14	11	14	1.90	0.58	11 00	14	10.6	S. W.
25	4	13	54	18	34	26	10	q	3	5	23	17	2.91	0.61	...	3	12.5	W.
25	4	d	52	17	34	26	8	22	0	7	24	23	3.82	0.77	...	15	24.7	...
25	— 4	14	65	20	34	4	7	30	1	9	21	20	3.91	0.80	...	15	19.4	...
25	— 10	14	58	18	42	26	3	19	3.6	12.2	15.2	13.4	3.08	1.65	...	3	...	...
25	— 2	5	60	19	37	26	7	30	0	16	15	15	2.91	0.63	9 00	16	16.5	N. W.
25	— 3	5	58	19	37	26	7	22	2	13	16	14	3.28	1.44	...	3	18.4	W.
25	— 3	5	49	14	23	21	4	r	...	...	...	15	2.35	0.60	...	15	...	...
25	— 1	8	56	22	41	26	7	22	...	...	...	7	1.99	0.75	...	3	...	S.
25	— 10	14	64	19	40	26	8	s	1	7	23	23	5.29	1.10	...	3	28.0	S. W.
25	— 5	14	53	15	33	26	6	22	7	15	9	13	3.03	0.90	15 20	15	16.8	W.
25	— 2	14	54	16	26	j	3	19	7	14	10	14	3.92	1.00	...	3	16.5	S. W.
25	— 4	5	59	17	37	26	6	31	12	7	12	16	4.02	0.65	...	3	21.0	S.
25	— 8	5	65	20	40	4	5	13	1	9	21	12	2.38	1.13	...	3	25.5	S.
25	— 0	e	58	18	42	26	8	19	1	13	17	16	1.87	0.56	...	3	9.8	S. W.
25	— 2	5	64	20	37	6	9	22	1	16	14	16	3.18	1.03	21 30	3	17.2	N. W.
25	— 4	13	50	17	36	26	9	t	...	...	...	6	2.80	...	...	...	...	...
25	— 31	13	71	21	50	26	5	25	4.2	6.8	20.0	16.0	5.45	1.76	...	16	...	...
16	— 31	13	78	26	44	k	9	28	8	9	14	12	4.27	1.76	...	16	19.0	W.
25	— 0	14	70	19	38	21	8	29	5	4	22	19	4.33	1.60	...	3	21.3	W.
25	— 20	14	77	22	50	26	6	8	1	12	18	19	5.81	1.16	...	16	34.0	W.
25	— 20	14	67	18	41	26	5	25	1	2	28	11	5.92	0.86	...	4	37.1	S.
25	— 13	14	62	18	42	26	6	8	6	7	18	19	6.93	1.28	...	10	43.9	S. W.
16	7	14	50	16	34	23	4	17	6.5	14.5	10.0	11.5	3.68	1.20	...	3	...	...
16	13	14	50	13	24	16	4	17	5	15	11	5	3.49	0.77	...	3	...	S. W.
24	13	18	48	16	32	15	8	4	...	...	...	9	3.31	1.20	...	3	...	N. W.
25	7	14	53	19	34	23	5	5	...	...	...	8	4.50	1.00	7 30	16	6.5	W.
25	14	14	47	15	33	4	6	5	8	14	9	14	3.43	0.95	...	15	11.5	W.
25	— 15	14	57	18	36	m	4	20	3.8	12.7	14.5	13.4	3.55	2.00	...	3	...	...
25	— 3	14	57	14	26	21	4	20	5	8	18	15	2.54	0.67	...	3	...	N. W.
25	— 9	f	62	20	35	26	6	u	0	11	20	15	4.09	0.99	...	3	17.6	N. W.
25	— 3	14	52	17	33	26	9	v	4	13	14	16	3.83	1.39	...	3	18.2	S. W.

## METEOROLOGICAL DATA

LOCATION OF STATIONS.			BAROMETER.					HUMIDITY.		TEMP.			
STATIONS.	County.	Elevation, feet.	Mean.	Highest.	Date.	Lowest.	Date.	Monthly range.	Mean relative.	Dew point (degrees).	Mean of tri-daily observations.	Mean of maximum and minimum.	Highest.
<i>Hudson Valley—(Con)</i>													
Poughkeepsie .....	Dutchess .....	180 .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	29.15	30.15
Wappinger's Falls .....	Orange .....	167 .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	29.53	30.53
West Point .....	Putnam .....	546 .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	32.60	33.60
Boyd's Corners .....	Putnam .....	500 .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Carmel .....	Putnam .....	500 .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Stillwater .....	Saratoga .....	150 .....	.....	.....	.....	.....	.....	.....	.....	.....	28.8	28.75	29.75
Rondout .....	Ulster .....	150 .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	28.15	29.15
<i>Mohawk Valley</i>													
Rome .....	Oneida .....	445 .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	23.60	24.60
<i>Champlain Valley</i>													
Plattsburgh Barracks .....	Clinton .....	125 .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	21.25	22.25
Port Henry .....	Essex .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	21.25	22.25
Glens Falls .....	Warren .....	340 .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Whitehall .....	Washington .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
<i>St. Lawrence Valley</i>													
Malone .....	Franklin .....	810 .....	.....	.....	.....	.....	.....	.....	.....	.....	15.9	15.8	16.4
Madison Barracks .....	Jefferson .....	266 .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	23.15	24.15
Watertown .....	.....	486 .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Canton .....	St. Lawrence .....	304 .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	23.50	24.50
North Hammond .....	" .....	300 .....	.....	.....	.....	.....	.....	.....	.....	.....	22.6	23.50	24.50
Ogdensburg .....	" .....	258 .....	.....	.....	.....	.....	.....	.....	.....	.....	17.0	16.05	17.05
Potsdam .....	" .....	300 .....	.....	.....	.....	.....	.....	.....	.....	.....	15.8	15.8	16.8
<i>Great Lakes</i>													
Dunkirk .....	Chautauqua .....	590 .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	27.35	28.35
Buffalo .....	Erie .....	690 .....	30.09	30.80	18	29.27	16	1.53	77	23	.....	28.05	29.05
Eden Centre .....	.....	690 .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	24.95	25.95
Brockport .....	Monroe .....	520 .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Rochester .....	.....	621 .....	30.12	30.82	18	29.48	28	1.34	84	23	.....	27.05	28.05
Fort Niagara .....	Niagara .....	263 .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	28.45	29.45
Hees Road Station .....	.....	320 .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	28.55	29.55
Baldwinsville .....	Onondaga .....	390 .....	.....	.....	.....	.....	.....	.....	.....	.....	26.8	25.85	26.85
Albion .....	Orleans .....	521 .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Oswego .....	Oswego .....	304 .....	30.08	30.80	18	29.41	16	1.39	82	23	.....	25.05	26.05
Palermo .....	" .....	460 .....	.....	.....	.....	.....	.....	.....	.....	.....	23.6	24.15	25.15
Lyons .....	Wayne .....	407 .....	.....	.....	.....	.....	.....	.....	.....	.....	23.5	23.35	24.35
Erie, Pa. ....	Erie .....	681 .....	30.10	30.78	18	29.47	16	1.31	78	25	.....	31.05	32.05
<i>Central Lakes</i>													
Fleming .....	Cayuga .....	1000 .....	.....	.....	.....	.....	.....	.....	.....	.....	27.5	27.35	28.35
Geneva .....	Ontario .....	459 .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Watkins   .....	Schuyler .....	737 .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Romulus .....	Seneca .....	719 .....	.....	.....	.....	.....	.....	.....	76	30	.....	28.35	29.35
Ithaca .....	Tompkins .....	793 .....	30.09	30.82	18	29.38	16	1.44	.....	.....	27.9	26.35	27.35
Mean .....	.....	.....	30.11	30.92	14	29.27	16	1.40	78	23	.....	25.45	26.45

\* Mean of the tri-daily observations. † Mean of the maximum and minimum by the from the tri-daily observations are derived by the formula  $(7 A. M. + 2 P. M. + 9 P. M. + 9 P. M.) \div 4$  four hours.

(a) 23, 24; (b) 9, 24; (c) 5, 13; (d) 4, 5, 13; (e) 4, 13, 14; (f) 13, 14; (g) 5, 14; (h) 12, 13; (i) 4, 10, 22, 29; (v) 5, 20, 29; (w) 2, 16, 28, 29; (x) 24, 28.

FOR DECEMBER, 1893 — (Concluded).

TEMPERATURE — (IN DEGREES FAHR.).										SKY.			PRECIPITATION — (INCHES).					WIND.
Date.	Lowest.	Date.	Monthly range.	Mean daily range.	Greatest daily range.	Date.	Least daily range.	Date	Number of clear days.	No. of partly cloudy days.	Number of cloudy days.	Number of days on which 0.01 or more inches fell.	Total.	Greatest rainfall.	Duration.†	Date.	Total snow fall.	Prevailing direction.
25	1	7	60	23	36	27	7	19	5	16	10	13	3.59	0.85	H. M.	14	15.3	N. W.
26	3	6	53	18	32	6	7	5	8	12	11	18	4.05	1.40	19 00	8	18.8	S. E.
26	11	9	49	23	36	26	10	15	...	...	...	8	2.66	...	...	...	8.0	N. W.
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
26	15	14	73	19	36	26	7	20	1	16	14	10	4.43	2.00	...	8	20.0	W.
26	2	14	53	15	33	26	7	20	...	...	...	...	3.30	...	...	...	19.5	S.
17	10	14	59	16	35	26	5	31	...	...	...	20	5.43	0.87	...	3	...	...
17	10	14	59	16	35	26	5	31	...	...	...	20	5.43	0.87	...	3	...	S.
a	18	14	83	23	63	23	1	1	...	...	...	6	3.92	1.50	9 30	16	...	...
a	18	14	83	23	63	23	1	1	...	...	...	6	3.92	1.50	9 30	16	15.4	N. E.
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
26	14	f	64	20	51	25	0	17	5.7	9.7	15.6	13.0	4.49	1.82	...	25	...	...
26	14	13	62	20	44	26	7	12	5	7	19	18	6.21	1.82	...	16	31.5	S. W.
26	14	14	66	21	50	15	0	17	...	...	...	11	3.52	0.82	...	25	12.7	W.
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
b	10	13	60	15	38	30	2	8	8	8	20	16	3.53	1.22	...	16	21.3	N.
26	15	h	67	26	51	25	10	2	9	14	8	...	4.30	...	...	...	16.0	S. W.
...	16	f	...	...	...	...	...	...	...	...	...	7	4.89	1.18	...	15-16	27.0	S. W.
26	4	5	56	14	45	25	1	20	1.1	6.2	23.7	20.1	3.89	2.37	...	15-16	...	...
15	8	13	47	12	26	15	5	30	0	8	23	24	4.36	0.98	...	3	...	W.
16	4	5	55	12	32	5	1	20	0	12	19	18	6.85	1.20	10 00	7	39.0	S. W.
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
26	5	14	57	12	22	8	4	17	2	8	21	27	3.84	0.89	...	15	...	S. W.
26	18	c	46	12	23	8	4	22	...	...	...	11	3.05	1.45	...	15	5.0	W.
26	9	c	49	14	24	8	6	22	0	5	26	19	4.12	2.37	...	15-16	12.5	S. W.
26	0	12	59	19	45	25	6	30	5	3	23	18	4.40	1.20	...	2	15.0	N. W.
26	2	13	60	12	22	21	3	11	0	2	29	26	3.84	0.47	...	23	...	S. E.
26	6	13	64	16	36	26	6	22	0	7	24	20	3.22	0.85	...	1	15.0	S. E.
26	4	5	58	14	24	21	6	2	3	2	26	15	2.60	0.30	...	4	22.0	W.
26	14	2	60	12	24	15	4	20	0	9	22	23	2.65	0.54	...	3	...	S. W.
26	0	g	58	17	41	16	5	7	1.7	14.3	15.0	10.7	1.71	0.45	...	1	...	...
26	4	13	54	17	41	16	5	7	2	19	10	6	1.36	0.40	8 00	1	9.0	S.
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
26	8	13	58	16	35	26	8	22	2	9	20	10	1.89	0.45	...	14	12.6	S.
26	0	g	62	17	36	26	6	22	1	15	15	16	2.03	0.42	12 00	15	15.6	S. E.
a	31	13	61	18	51	25	0	17	3.6	10.8	16.6	14.1	3.89	2.37	...	15-16	19.2	S. W.

Draper thermograph. || Report received too late to be used in computing means. The means  
† Blank indicates that the duration is not shown in the original records, but is within twenty-

24; (j) 25, 26; (k) 10, 25; (m) 26, 27; (n) 15, 30; (p) 2, 6; (q) 2, 22; (r) 30, 31; (s) 10, 13; (t) 2, 7;

## DAILY AND MONTHLY MEAN TEM

STATIONS.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<i>Western Plateau</i> ..	26	20	27	16	14	25	22	20	31	31	30	27	11	15
Alfred Centre .....	28	16	28	14	14	26	22	18	28	29	17	28	10	13
Angelica .....	26	20	30	16	10	24	22	26	30	30	30	29	12	18
Friendship .....	26	20	30	20	12	25	24	20	22	22	20	31	13	19
Humphrey .....	28	24	28	22	17	27	21	22	30	28	23	30	15	17
<i>Arkwright</i> .....														
Elmira .....														
Lekoy .....	27	25	25	12	17	25	22	22	24	24	18	18	12	16
Mount Morris .....	24	24	27	14	10	26	21	20	23	24	19	26	9	14
<i>Lockport</i> .....	24	17	24	14	16	27	20	22	24	25	26	18	12	18
Victor .....														
Wedgewood .....	26	22	26	14	12	25	26	17	30	30	18	28	9	11
Addison .....	20	22	22	18	13	24	30	20	31	34	24	23	14	15
<i>South Canisteo</i> .....	28	21	30	17	12	28	26	19	30	31	22	31	10	14
Arcade .....	24	19	26	15	15	23	22	18	29	30	17	28	10	18
Varysburg .....	25	16	22	14	16	23	18	22	33	32	18	29	10	12
Italy Hill .....														
<i>Eastern Plateau</i> .....	30	22	29	20	10	19	26	17	27	33	31	24	10	10
Binghamton .....	29	20	29	16	6	22	28	18	29	35	31	28	13	10
Oxford .....	30	24	28	24	8	18	26	15	25	32	31	24	11	14
Cortlandt .....	28	22	30	14	11	21	25	16	29	32	20	24	10	12
South Kortright .....	24	18	26	25	14	16	24	14	26	30	30	23	8	10
<i>Brookfield</i> .....	26	18	25	16	3	10	24	14	26	31	18	11	4	4
Middletown .....	34	25	31	28	16	22	30	25	24	36	24	28	14	12
Port Jervis .....	26	29	29	21	16	21	26	18	21	37	26	29	12	11
Cooperstown .....	27	19	29	17	8	21	24	13	26	38	18	22	6	7
<i>New Lisbon</i> .....	28	30	28	17	6	16	24	11	22	34	18	20	4	4
Perry City .....	27	30	30	10	15	22	21	17	31	33	30	26	9	10
Waverly .....	37	21	32	20	8	19	29	18	31	34	23	31	14	11
Minnewaska .....	30	20	28	27	14	23	30	22	30	34	25	26	12	12
<i>Northern Plateau</i> ..	27	15	24	12	7	19	21	18	25	27	11	10	-7	-4
Lyon Mountain .....														
Amersand .....														
Saranac Lake .....					2	22	15	16	30	18	4	2	-14	-6
Gloversville .....	29	19	24	22	6	18	23	15	17	32	18	16	4	-6
<i>Constableville</i> .....														
Lowville .....	26	12	22	15	3	18	24	20	26	34	14	14	-9	-4
Number Four .....	26	14	28	6	6	17	22	21	28	28	10	8	-10	-4
Turlin .....	28	14	22	6	7	20	21	19	23	30	12	10	-8	-1
<i>Coast Region</i> .....	40	30	40	31	25	31	34	31	36	38	30	35	20	22
New York City .....	43	30	38	28	26	31	36	34	38	40	29	38	18	23
Willet's Point .....	35	28	39	26	24	32	36	31	37	35	31	32	18	25
Brentwood .....					25	28	28	26	32	38	26	35	23	18
Betauket .....	43	32	43	40	26	32	36	33	35	41	32	36	22	20
<i>Hudson Valley</i> .....	33	26	30	23	15	19	26	19	24	36	23	25	12	10
Albany .....	34	24	30	19	13	18	26	20	25	38	17	23	6	6
Lebanon Springs .....	29	19	24	27	11	14	25	19	27	36	21	20	3	3
Honeymead Brook .....	35	26	30	25	16	18	26	20	26	36	24	26	11	12
<i>Poughkeepsie</i> .....	35		28	26	14	20	25	16	20	38	30	27	16	10
Wappinger's Falls .....	37	28	30	27	16	19	27	17	22	38	26	30	16	13
West Point .....	32	36	36	26	23	26	30	28	25	36	30	30	30	24
<i>Boyd's Corners</i> .....														
Stillwater .....	32	22	27	14	10	16	20	16	16	33	24	16	1	4
Rondout .....	33	28	31	24	16	18	26	18	28	36	25	26	12	10
Peekskill .....														
<i>Mohawk Valley</i> .....	36	23	20	21	13	16	26	20	21	30	21	14	10	0
Rome .....	36	23	20	21	13	16	26	20	21	30	21	14	10	0
<i>Champlain Valley</i> ..	26	14	16	11	6	16	24	19	28	34	6	5	-3	-2
Platteb'h Barracks .....	26	14	16	11	6	16	24	19	28	34	6	5	-3	-2
Glens Falls .....														

## TEMPERATURES FOR DECEMBER, 1893.

15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Monthly mean
36	40	34	30	22	16	28	37	44	45	51	27	23	35	34	21	22	26.9
34	39	30	30	23	13	24	35	43	45	50	28	30	33	33	21	20	25.4
38	40	34	31	22	17	26	38	44	41	52	30	28	36	35	24	23	27.3
39	40	36	29	26	17	29	38	42	44	53	30	24	36	38	28	22	28.3
38	40	30	21	22	18	26	36	46	45	50	30	18	35	32	22	22	27.8
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
35	37	19	21	27	17	28	31	39	44	44	17	21	36	32	15	20	25.5
38	42	24	30	27	20	30	40	46	48	54	18	25	38	32	18	22	27.1
30	38	23	19	25	15	27	35	42	43	46	25	24	36	32	16	19	25.7
28	42	22	20	22	16	28	26	44	46	54	27	18	32	34	20	22	26.0
37	44	28	24	28	18	30	40	46	44	50	33	24	36	39	28	27	29.5
36	43	26	22	27	18	28	36	42	46	53	31	24	35	37	24	24	28.3
38	39	20	19	23	14	26	36	44	44	50	27	23	34	32	20	20	25.9
42	40	22	15	24	13	31	36	46	46	53	29	26	36	32	18	19	26.4
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
29	42	26	21	27	18	26	35	42	40	46	29	22	32	37	27	24	26.6
32	45	27	22	29	17	27	38	44	45	46	30	22	36	36	20	25	27.5
27	40	26	19	23	16	24	36	42	36	45	30	22	30	36	27	26	26.2
29	42	26	20	26	16	26	35	42	38	42	22	22	31	32	22	21	25.4
30	46	26	18	29	24	25	34	42	34	48	22	18	30	37	27	22	26.0
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
30	40	25	21	23	14	26	34	39	38	46	26	25	32	34	26	20	23.4
27	43	30	24	32	21	27	38	42	42	49	34	24	31	40	30	26	29.3
36	41	34	24	29	22	25	36	42	38	43	30	24	34	43	34	33	28.7
34	41	27	21	23	15	24	33	36	40	50	28	22	35	36	26	19	24.9
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
28	42	26	24	16	22	35	34	41	36	50	28	22	35	33	26	21	25.4
32	42	27	20	25	14	27	36	44	42	52	25	18	32	33	20	19	25.8
32	43	29	22	31	19	26	39	45	42	51	33	22	35	40	28	22	28.6
36	44	34	18	28	18	32	30	40	44	49	32	19	30	38	24	22	27.5
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
22	37	16	10	24	10	20	28	36	37	46	21	16	31	29	13	16	19.8
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
28	34	9	10	16	10	22	26	34	36	24	8	21	30	16	6	17	16.7
30	38	25	16	26	14	20	29	34	36	40	26	16	30	36	24	19	22.1
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
20	36	22	6	26	10	18	26	42	38	48	22	14	31	35	15	12	20.8
23	38	16	10	25	8	30	29	36	36	44	22	13	30	28	10	15	19.5
31	38	18	10	25	8	21	38	36	37	44	23	16	32	30	12	15	19.9
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
33	47	35	32	36	26	32	40	47	48	50	35	27	37	44	32	31	34.7
34	51	35	32	37	26	34	42	48	46	50	28	28	37	46	31	31	35.1
31	44	33	32	32	24	34	44	48	53	50	35	29	37	42	31	30	34.1
33	45	41	33	39	26	30	36	46	46	48	36	24	35	43	34	32	35.6
32	48	42	30	38	28	31	40	46	47	52	39	28	38	44	34	30	36.1
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
25	41	33	24	32	22	29	33	39	39	43	31	23	33	39	27	22	27.8
30	40	29	25	32	18	28	32	35	36	45	18	22	34	41	18	20	26.0
28	42	34	30	28	20	31	33	39	38	44	29	18	29	37	27	19	26.1
30	43	30	26	33	18	28	32	41	40	46	30	20	30	40	26	20	27.9
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
26	42	38	32	34	26	30	32	40	40	50	34	30	37	39	32	27	29.1
29	42	36	24	34	24	26	35	40	42	50	35	24	34	40	26	26	29.5
30	40	39	34	33	26	30	39	42	43	50	39	28	32	40	34	26	29.6
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
16	39	23	19	22	30	28	26	34	31	45	28	20	34	38	24	18	23.7
26	40	30	23	22	30	30	34	40	40	48	34	24	32	38	23	18	26.1
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11	32	37	30	27	32	18	32	32	36	37	30	17	26	36	26	30	26.6
11	32	37	30	27	32	18	32	32	36	37	30	17	26	36	26	30	26.6
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
12	26	39	14	18	21	26	24	34	36	43	26	20	26	36	0	2	21.2
12	26	39	14	18	21	26	24	34	36	43	26	20	26	36	0	2	21.2

## DAILY AND MONTHLY MEAN TEM

STATIONS.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<i>St. Lawrence Valley.</i>	23	18	13	6	5	22	26	23	33	31	10	1	-6	1
Malone.....	22	8	8	3	-1	17	24	18	30	33	11	-1	-9	-2
Madison Barracks..	30	20	20	16	10	13	30	26	32	36	12	7	-1	4
Watertown.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Canton.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
North Hammond..	27	20	19	12	3	25	31	25	38	35	7	8	-1	6
Ogdensburg.....	18	10	8	2	12	28	21	30	30	19	16	-4	-8	-1
Potsdam *.....	18	8	12	-2	-1	26	22	25	33	30	2	-3	-10	1
<i>Great Lakes</i> .....	26	20	26	17	16	26	24	23	33	31	19	18	13	18
Dunkirk.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Buffalo.....	23	19	24	18	22	32	23	27	38	31	18	20	12	19
Eden Centre.....	25	15	21	16	12	20	14	20	20	14	6	10	13	26
Brockport.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Rochester.....	24	19	25	16	16	28	24	24	36	34	16	20	10	15
Fort Niagara.....	32	25	29	23	22	33	30	26	32	36	24	23	16	19
Hess Road Station.	30	22	26	18	20	30	26	24	36	32	23	20	15	20
Baldwinsville.....	24	22	24	17	16	23	20	30	32	26	23	12	6	13
Albion.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Oswego.....	29	23	26	15	12	24	27	22	33	34	12	16	7	10
Palermo.....	26	19	24	8	7	22	24	22	28	40	18	12	2	6
Lyons.....	28	23	29	16	18	25	25	22	34	34	20	21	12	20
Erie, Pennsylvania.	24	19	27	26	24	26	23	27	38	32	29	33	21	28
<i>Central Lakes</i> .....	30	31	30	17	13	24	26	20	33	35	22	26	10	13
Fleming.....	29	23	33	22	15	26	26	20	32	33	25	24	9	13
Geneva.....	32	23	30	17	12	26	26	20	34	36	16	25	.....	.....
Watkins.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Romulus.....	30	22	30	14	13	22	26	20	32	34	22	27	11	16
Ithaca.....	29	17	29	15	10	24	28	18	33	36	24	26	10	10
Means.....	29.7	19.4	25.5	17.4	11.4	21.7	25.6	20.9	29.1	32.6	18.8	18.5	6.0	8.3

\* Means of tri-daily observations. † Mean of the maximum and minimum by the Draper and minimum of the ordinary self-registering thermometers. The means from the tri-daily reports received too late to be used in computing averages.

## FEATURES FOR DECEMBER, 1893 — (Concluded).

15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Monthly mean
16	31	16	12	21	11	26	19	31	41	38	15	22	34	25	2	8	18.4
14	26	18	6	26	6	19	18	23	38	42	21	15	32	24	2	0	15.8
31	34	23	18	30	14	18	32	28	40	48	26	30	32	35	6	14	22.1
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
31	37	21	15	23	21	37	29	44	45	38	14	29	35	24	2	8	22.5
15	25	12	10	12	8	26	30	24	40	26	10	22	35	24	6	12	16.0
11	32	6	11	23	5	32	8	38	40	36	6	26	34	30	4	7	15.8
34	40	25	24	27	21	31	38	42	44	49	25	28	37	34	19	22	27.3
41	40	33	28	27	18	30	33	42	44	47	19	29	38	30	16	22	25.0
39	42	27	29	23	32	39	42	35	35	42	26	26	28	32	20	24	24.9
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
31	42	21	24	28	18	30	40	47	48	52	19	28	39	33	18	22	27.0
30	38	23	25	32	24	32	38	41	46	54	30	30	40	37	23	24	30.4
30	38	27	24	29	22	31	36	44	45	48	28	28	39	33	20	22	28.5
33	40	20	24	34	20	34	40	45	46	36	27	28	38	28	17	21	25.8
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
35	42	22	23	30	14	27	33	41	42	52	18	28	36	35	13	18	26.0
34	41	26	18	29	17	21	28	40	37	48	27	22	34	36	17	17	24.1
36	40	26	24	28	17	29	38	48	46	56	28	27	39	34	30	24	28.3
47	37	32	26	36	22	30	41	48	52	52	23	29	40	37	23	30	31.0
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
32	41	23	21	27	17	29	37	48	46	53	30	24	36	36	22	21	28.0
27	32	30	21	26	19	28	35	47	45	49	27	23	33	35	21	19	27.3
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
34	46	27	21	26	16	30	38	48	46	54	30	25	35	36	22	22	28.3
34	46	28	22	28	16	29	33	48	46	56	33	24	36	38	24	22	28.3
34.9	37.7	27.6	19.8	26.3	18.4	26.5	32.3	39.5	41.2	45.7	26.9	22.1	33.1	35.0	18.9	18.8	25.4

thermograph. Means for all stations not otherwise indicated are derived from the maximum observations are derived by the formula  $(7 \text{ a. m.} + 2 \text{ p. m.} + 9 \text{ p. m.} + 9 \text{ p. m.}) \div 4$ .



## DAILY AND MONTHLY PRECIP

STATIONS.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<i>Western Plateau.</i>	0.19	0.06	0.57	0.03	0.00	0.01	0.01	T.	0.10	0.08	0.06	0.06	0.06	0.34
Alfred Centre	..	..	.60	..	..	..	..	..	.60	T.	..	.40	.10	..
Angelica	.15	.15	.65	.10	..	..	..	..	.08	T.	.10	.10	T.	.30
Bollivar	.24	..	.77	..	..	..	..	..	.06	T.	.10	.04	.01	.04
Friendship	.30	T.	.69	.01	..	..	T.	..	T.	T.	.23	.02	T.	.40
Humphrey	.60	.15	.30	..	..	..	..	..	.30	.30	.30	.30	..	.50
Little Valley	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Cherry Creek	.42	.34	.79	.10	..	..	.07	..	T.	.31	.20	.11	.12	.32
Elmira	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Akron	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Le Roy	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Avon	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Mt. Morris	.08	..	.68	..	..	..	T.	..	..	.05	..	.09	..	.18
Lockport	.30	..	.60	..	..	..	T.	..	.55	T.	..	.30	..	.30
Victor	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Wedgewood	.12	..	.40	T.	..	..	..	..	T.	..	.05	T.	..	.30
Addison	.08	..	.30	.01	..	..	T.	..	..	.07	.01	T.	..	.58
Atlanta	.62	.01	.66	.04	..	..	.08	..	..	..	.02	..	..	.30
Pine City	.07	.06	.57	.11	..	..	..	..	..	T.	.06	T.	..	.40
South Canisteo	.32	T.	.61	T.	..	..	T.	..	.01	.05	.05	.05	T.	.78
Arcade	.30	.04	.60	T.	..	..	.01	T.	T.	.17	.10	.07	.02	.22
Attica	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Castile	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Varysburg	.30	.05	.40	.08	..	.15	..	..	T.	.22	.06	.06	..	.22
<i>Eastern Plateau.</i>	0.12	0.01	1.01	0.07	0.07	0.08	T.	T.	0.02	0.02	0.03	0.03	0.01	0.19
Binghamton	.10	..	.60	..	..	..	..	..	..	.03	T.	.05	..	.20
Chenango Forks	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Oxford	.15	..	1.44	T.	..	.15	..	..	..	.01	..	..	..	.19
Oortland	..	..	.55	.25	..	..	..	..	..	..	.03	.14	.08	.19
Bovina Centre	.19	..	3.12	..	.26	..	..	..	..	..	..	..	..	..
Deposit	..	..	.60	..	..	..	..	..	..	..	..	.30	..	..
South Kortright	..	..	.75	..	..	.07	..	..	..	..	..	..	..	.14
Brookfield	.40	.20	1.10	..	..	..	.06	..	..	.25	.30	.30	..	.10
Apulia	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Middletown	.05	..	.59	..	..	.30	..	..	.10	..	..	..	..	.30
Port Jervis	.08	..	1.00	.35	.50	..	..	..	.08	..	..	..	..	.30
Warwick	.12	..	1.00	.40	.29	..	..	..	.08	..	..	..	..	..
Cooperstown	.23	..	1.65	..	..	..	.02	..	..	..	..	.24	..	.30
New Lisbon	.12	..	1.13	..	..	..	T.	..	..	T.	..	.01	..	.30
Perry City	.14	..	.56	..	..	..	T.	T.	..	..	.16	T.	.06	.30
Newark Valley	.30	..	.80	.05	..	..	..	..	..	..	..	.07	..	.05
Waverly	.09	T.	1.03	T.	..	..	..	..	T.	T.	.06	T.	..	*
Ellis	.11	..	.18	.07	..	..	..	..	..	..	..	..	.09	.11
Minnewaska	..	..	1.05	..	.15	..	..	..	..	..	..	..	..	..
<i>Northern Plateau.</i>	0.09	0.02	0.96	0.11	0.01	0.01	0.07	0.01	T.	0.27	0.17	0.24	0.00	0.05
West Chazy	..	..	1.01	T.	T.	..	..	..	..	..	..	.24	..	T.
Au Sable Forks	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Keene Valley	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Ampersand	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Saranac Lake	..	..	.60	..	..	..	T.	T.	..	.16	..	.18	..	..
Gloversville	.05	.08	1.60	..	T.	.05	T.	..	..	.12	..	.27	..	.16
Constableville	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Lowville	.31	..	.93	.03	..	..	.09	..	..	.30	.09	.23	..	..
Number Four	..	..	.14	.86	..	..	.19	..	..	..	.47	.34	..	*
Turin	.34	T.	1.01	..	..	..	.26	T.	T.	1.28	.79	.11	..	.08
Boonville	.08	.04	1.06	..	..	..	T.	.05	..	.30	..	.28	..	.11
Galway	..	..	..	..	..	..	..	..	..	..	..	..	..	..
King's Station	.10	..	1.50	..	.10	..	..	..	..	..	..	.30	..	..
<i>Coast Region.</i>	0.08	0.02	0.63	0.18	0.29	T.	0.00	0.00	0.32	0.01	0.00	0.00	0.00	0.10
New York City	.08	..	.77	.45	.30	.01	..	..	.39	.02	..	..	..	.08
Willet's Point	..	.10	1.20	..	.15	..	..	..	..	..	..	..	..	T.
Brentwood	..	..	..	..	.30	..	..	..	.75	..	..	..	..	.30
Setauket	.05	..	.55	.25	.38	..	..	..	.20	..	..	..	..	.30
Bedford	*	*	..	*	*	*	*	\$1.72	.24	.01	..	..	..	T.

## TATION FOR DECEMBER, 1893 — (INCHES).

15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total.
0.51	0.18	0.05	0.08	0.12	0.02	T.	0.08	0.15	0.07	0.24	0.09	T.	0.18	0.08	T.	0.07	3.64
.....	.81	.....	.....	.....	.....	.....	.....	.42	.....	.....	.....	.....	.20	.....	.....	.....	3.13
.60	.05	.05	.20	.25	T.	.....	.30	.08	.06	.18	T.	.....	.15	.06	.....	.08	3.53
.79	.15	.01	.08	.28	.....	.....	.16	.....	.....	.50	.10	.....	.14	.08	.....	.09	4.08
.50	.14	.05	.10	.12	.04	.....	.....	.18	.12	.43	.06	T.	.08	.02	T.	.08	3.51
.73	.16	.12	.10	.30	.....	.....	.80	.....	.28	.43	.06	.....	.25	.....	.....	.06	5.74
.32	.25	.18	.17	.18	.19	.05	.....	.40	.28	.27	.25	.03	.15	.15	T.	.15	6.29
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6.43
.35	.16	.....	.06	.....	.....	.....	.....	.15	.....	.07	.11	.....	.04	.12	.....	.....	2.09
1.26	.49	T.	.20	.30	T.	.....	.....	.34	T.	.18	.10	.....	.15	T.	T.	.10	4.77
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.27	.....	T.	.05	.10	T.	.....	.08	T.	.....	.14	.06	T.	.....	.09	.....	.10	1.71
.30	T.	T.	.02	T.	.....	.....	.....	.06	.02	.29	.09	.....	T.	.19	.....	.03	1.90
.30	.....	.10	.....	.....	.....	.....	T.	.17	.04	.10	.....	.....	.39	.....	.....	.215	
.16	.01	T.	T.	T.	.....	.....	.....	.15	.....	.....	.47	T.	.....	.11	T.	.10	2.26
.....	.05	.04	.10	.12	.....	.....	.05	.....	.10	.42	.....	T.	T.	.20	T.	.06	2.91
.77	.11	.04	.02	.14	.01	.....	.04	.23	.10	.30	.09	T.	.14	.22	T.	.08	3.32
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.80	.27	.20	.10	.15	T.	.....	T.	.15	T.	.31	.10	T.	.29	.05	T.	.10	3.91
0.60	0.11	0.01	0.02	0.07	0.03	0.00	0.02	0.11	0.04	0.09	0.07	0.02	0.05	0.06	0.01	0.14	3.14
.63	.04	T.	.....	.10	.10	.....	.....	.....	.12	.04	.30	.10	.30	.....	.....	.20	2.91
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.55	.12	T.	.....	.10	.....	.....	T.	.23	.08	.10	.....	.05	.05	T.	T.	.20	3.28
.60	.....	.....	.04	.07	.08	.....	.....	.12	.....	.12	.10	.06	.....	.03	.....	.....	2.35
1.94	.....	.....	.....	.17	.....	.....	.....	.22	.....	.....	.....	.....	.....	.22	.....	.22	6.35
.60	.30	.....	.....	.40	.....	.....	.....	.....	.....	.....	.....	.....	.10	.....	.....	.40	2.60
*	↑.22	.....	.....	.....	.....	.....	.....	.28	.....	.....	.....	.....	.29	.....	.....	.24	1.99
.60	.25	.05	.10	.10	.20	.....	.12	.41	.15	.30	.05	.05	.10	.01	.....	.10	5.29
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.80	.20	T.	.....	.09	.....	.....	.07	.05	T.	*	↑.20	.....	.01	T.	*	↑.17	3.03
.36	.15	.05	.....	.04	.....	.....	.08	.16	.....	.24	.....	.....	.03	.11	T.	.13	3.22
.60	.25	.....	.....	.....	.....	.....	T.	.03	T.	T.	.14	.....	.02	.02	T.	.12	3.07
.27	.30	.....	.....	.08	.12	.....	.....	.15	.....	.22	.01	.....	.10	.17	.....	.13	4.02
.37	.12	.....	.04	.....	.....	.....	.....	.....	.11	.07	T.	.01	.....	.02	.....	.08	2.38
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.12	.....	T.	.05	.05	.....	.....	.04	.....	.02	.13	.07	.05	T.	.02	.....	.10	1.87
.96	.03	T.	.07	T.	.....	.....	.....	.07	.05	.....	.09	T.	.03	.11	T.	.13	2.80
11.11	T.	T.	T.	.08	.....	.....	.02	.07	.12	.39	.04	.....	.08	.08	.01	.10	3.18
.47	.....	.....	.....	.06	.01	.....	.....	.02	.03	.08	.04	.....	.02	.10	.08	.....	1.47
11.30	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	*	↑.80	2.80
0.48	0.73	0.05	0.02	0.22	0.02	0.00	T.	0.35	0.03	0.42	0.08	0.05	0.24	0.10	T.	0.12	5.16
*	↑.33	T.	.....	.....	.....	.....	.....	.....	T.	.50	.12	.....	.09	.04	.....	.08	3.46
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
*	↑.76	.01	.....	.04	.....	.....	.....	.41	.....	.57	.10	.05	.34	.05	T.	T.	4.27
.50	.20	T.	.15	.16	.....	.....	T.	.40	.04	.13	.06	.03	.20	.04	T.	.15	4.33
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.33	1.16	.28	.....	.32	.18	.....	.....	.45	.03	.36	.17	.....	.16	.25	.....	.14	5.81
*	↑.07	.....	*	↑.68	.....	.....	.....	.26	*	↑.86	.10	.16	.46	.08	.....	.22	5.92
.34	.68	.11	T.	.42	.....	.....	T.	.21	T.	.71	.04	.11	.31	.03	.04	.....	6.93
.50	1.14	.03	.....	.34	.02	.....	.....	.80	.05	.45	.....	*	↑.45	.32	.....	.10	6.07
.76	.45	.....	.....	.25	.....	.....	.....	.30	.06	.21	.05	.....	.10	.....	.....	.25	4.42
0.74	0.67	0.01	T.	T.	0.00	0.00	T.	0.05	0.01	T.	0.05	0.00	0.06	0.27	0.09	0.10	3.73
.46	.83	.....	.....	T.	.....	.....	T.	T.	T.	.....	.07	.....	.02	.09	.08	.10	3.49
.78	.70	.....	T.	.....	.....	.....	.....	.....	.05	.....	.....	.....	.25	.....	.03	.05	3.31
1.00	1.00	.....	.....	.....	.....	.....	.....	T.	.....	.....	.10	.....	T.	1.00	.05	.....	4.50
.35	.30	.04	.....	T.	.....	.....	T.	T.	T.	T.	.07	.....	.08	.10	.22	.69	3.43
.49	.71	.....	.....	.....	.....	.....	.....	.26	T.	.....	.....	.....	T.	.16	.06	.25	3.90

## DAILY AND MONTHLY PRECIP.

STATIONS.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<i>Hudson Valley</i> ....	0.18	T.	1.07	0.19	0.18	0.03	T.	0.00	0.06	0.01	T.	0.01	0.00	0.12
Albany .....	.18	T.	.87	T.	.17	.03	.....	.....	.....	.02	T.	.05	.....	.10
Bethlehem Centre ..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	*
Lebanon Springs...	.28	T.	.99	.51	.....	.13	.....	.....	T.	.02	T.	.....	.....	*
Honeymead Brook.	.16	.....	1.39	.10	.25	.....	.01	.....	.14	.....	.....	T.	.....	.20
Pawling .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Poughkeepsie ..	.11	.....	1.11	.25	.21	.01	T.	.....	.12	.04	.....	.....	.....	.....
Wappinger's Falls.	.15	.....	1.40	.31	.23	.06	.....	.....	.16	.....	.....	.....	.....	.20
West Point .....	.....	.....	.....	.20	.01	.....	.....	.....	.20	.....	.....	.....	.....	*
Boyd's Corners ..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Carmel .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
So East Reservoir ..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Schodack Depot ..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Stillwater .....	.20	.....	2.00	.12	.16	.....	.....	.....	.....	.....	.....	.01	.....	.....
Rondout .....	.40	.....	1.00	.....	.40	.....	.....	.....	T.	.....	.....	.....	.....	*
Easton .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
<i>Mohawk Valley</i> ....	0.16	0.18	0.87	0.49	0.00	0.00	0.00	0.00	0.00	0.15	0.09	0.26	0.00	0.00
Rome .....	.16	.13	.87	.49	.....	.....	.....	.....	.....	.15	.09	.26	.....	.....
<i>Champlain Valley</i> ..	0.04	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.00	0.00
Plattsburgh Barracks.	.04	.....	1.00	.....	.....	.....	.....	.....	.....	.....	.....	.20	.....	.....
Port Henry .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Glens Falls .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Whitehall .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
<i>St. Lawrence Val.</i> ..	0.23	0.08	0.53	0.02	0.00	0.00	0.03	0.01	0.00	0.17	0.05	0.07	0.00	0.08
Malone .....	.40	.....	.73	.08	.....	.....	.04	.....	.....	T.	.....	.23	.....	.....
Madison Barracks ..	.....	.....	.44	.....	.....	.....	.10	.....	.....	.26	.24	.....	.....	.12
Watertown .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Canton .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
DeKalb Junction ..	.27	.....	.43	.....	.....	.....	.....	.05	.....	.13	.....	.09	.....	.....
North Hammond ..	.....	.15	.20	.....	.....	.....	.02	.....	.....	.10	.....	.12	.....	.06
Ogdensburg .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Potsdam .....	.50	.....	.80	.....	.....	.....	.....	.....	.....	.34	.....	.....	.....	.....
<i>Great Lakes</i> .....	0.18	0.17	0.38	0.12	0.00	T.	0.12	0.03	0.06	0.09	0.09	0.14	0.16	0.17
Dunkirk .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Buffalo .....	.16	.01	.98	.03	.....	T.	.14	.02	.06	.15	.13	.18	.05	.27
Eden Centre .....	.....	.40	.30	.50	.....	.....	1.20	.30	.20	.10	.....	.30	1.10	.30
Adams Centre .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Brookport .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Rochester .....	.03	.02	.86	.09	.....	T.	.01	.....	.08	.05	.08	.28	.10	.24
Fort Niagara .....	.....	.....	.30	.....	.....	.....	.....	*	† .23	.....	.....	.15	.....	.27
Hess Road Station..	.09	.....	.51	T.	.....	.....	T.	T.	.01	.08	.06	.12	.01	.07
Baldwinsville .....	.....	1.20	.15	.....	.....	.....	T.	.....	.07	.04	.31	T.	.12	.17
Albion .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Lyndonville .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Demster .....	.30	.....	.....	.25	.....	.....	.....	.....	.....	.20	.....	.....	.25	.19
Oswego .....	.24	.12	.44	.02	.....	.....	.01	T.	.....	.02	.15	.05	.22	.10
Palermo .....	.85	.01	.22	.....	.....	.....	.....	.....	.....	.08	.09	.....	.....	.06
Phoenix .....	.10	.18	.30	.26	.....	.....	T.	T.	.....	.05	.04	.14	.05	T.
Lyons .....	.25	.....	.30	.....	.....	.....	.....	.....	.....	.07	.30	.20	.25	.30
Erle, Pennsylvania.	.12	.06	.54	.01	.....	.....	.04	.....	.15	.06	.08	T.	T.	.08
<i>Central Lakes</i> .....	0.21	T.	0.36	0.03	0.00	0.00	T.	0.00	T.	0.00	0.10	0.07	0.03	0.21
Fleming .....	.40	.....	.30	.....	.....	.....	T.	.....	.....	.....	.....	.....	.....	.05
Geneva .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Watkins .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ronulus .....	.08	T.	.42	.....	.....	.....	.....	.....	.....	.....	T.	.30	.....	.45
Ithaca .....	.16	.....	.35	.10	.....	.....	T.	.....	T.	.....	.30	T.	.10	.13
Average .....	0.14	0.04	0.71	0.12	0.06	0.01	0.02	T.	0.06	0.08	0.06	0.11	0.02	0.12

\* Amount included in next measurement.

† Not used in computing the averages.

averages.

T—Trace.

§ The total

## 267

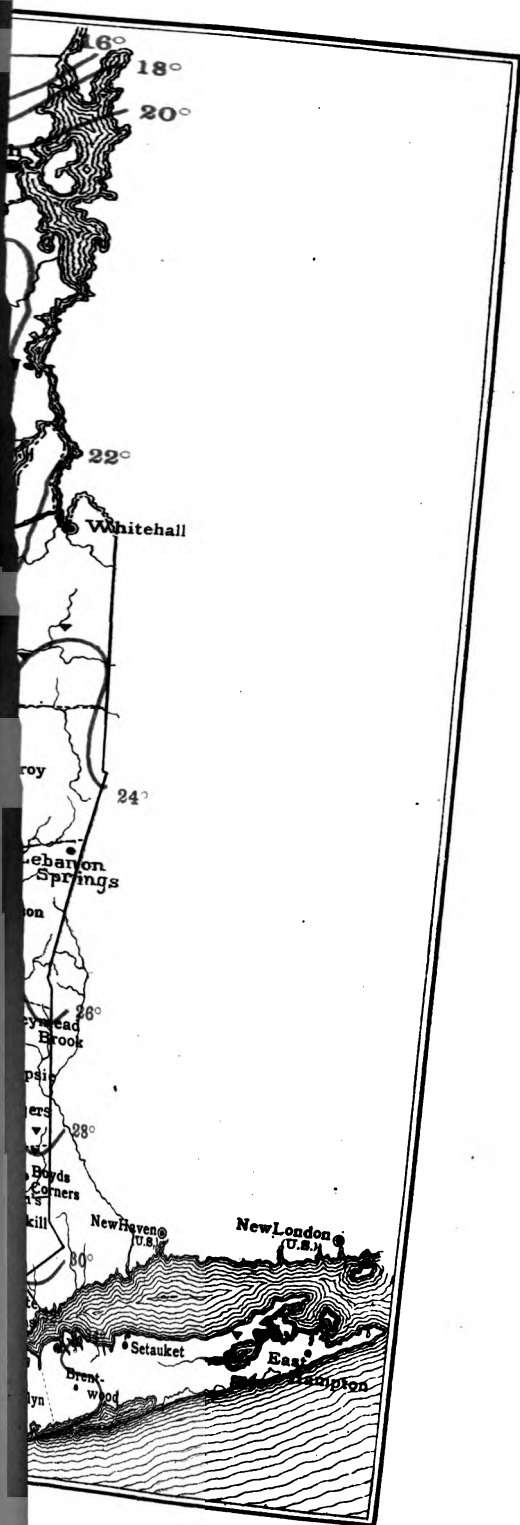
15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total.
0.52	0.57	0.05	0.00	0.01	T.	0.00	T.	0.08	0.08	0.05	0.06	T.	0.01	0.07	0.07	0.12	8.55
.32	.57	T.	.....	T.	.....	.....	T.	.12	.01	.02	T.	.....	T.	.13	.01	.19	2.54
↑.37	.58	.40	.....	.08	.02	.....	T.	.20	.02	T.	T.	T.	T.	.30	.03	.21	4.09
.45	.55	.....	.....	.05	.....	.....	.....	.07	.....	.....	.08	.....	.02	.01	.15	.25	3.88
↑.55	.58	.....	.....	.....	.....	.....	.....	.19	.....	.....	.....	.....	.06	*	↑.23	3.59	
.82	.49	.08	.....	.01	.....	.....	T.	.10	.....	.12	.11	.....	.08	.01	.05	.10	4.05
*	↑1.80	.....	.....	.....	.....	.....	.....	.....	.....	.25	.....	.....	.....	.....	.20	.....	2.66
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.50	.85	.....	.....	.....	.....	.....	.....	.....	.21	.....	.....	.....	.....	.13	.....	.25	4.43
*	↑.80	.....	.....	.....	.....	.....	.....	.....	.....	.....	.30	.....	.....	.....	*	↑.30	8.20
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
0.18	0.32	0.11	0.00	0.12	0.06	0.00	0.00	0.57	0.06	0.30	0.38	0.00	0.02	0.57	0.03	0.11	5.43
.18	.32	.11	.....	.12	.06	.....	.....	.57	.06	.30	.38	.....	.02	.57	.03	.11	5.43
0.00	1.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.97	0.00	0.00	0.00	0.00	0.00	0.00	0.21	8.32
.....	1.50	.....	.....	.....	.....	.....	.....	.....	.97	.....	.....	.....	.....	.....	.....	.21	3.93
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
0.34	1.08	0.01	0.02	0.31	0.00	0.15	0.07	0.28	0.28	0.67	0.04	0.04	0.15	0.02	0.04	0.03	4.58
.43	1.32	.05	.....	.14	.....	.12	.....	.65	.08	.68	.15	.06	.25	.12	.....	.12	3.53
.....	.65	.....	.....	.20	.....	.36	.....	.....	.82	.....	.....	.....	.18	.....	.15	.....	3.53
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1.19	.52	.....	.....	.23	.....	.13	.....	.45	.58	.79	.....	.12	.10	.....	.....	.03	5.01
.10	1.22	.....	.10	.10	.....	.....	.....	.30	.40	.38	.....	.08	.20	.....	.06	.....	3.31
.....	.....	.....	.....	.....	.....	.....	.....	.....	*	*	↑.87	.....	.....	.....	.....	.....	4.30
.....	1.18	.....	.....	.90	.....	.50	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4.89
0.55	0.25	0.08	0.10	0.11	0.05	0.01	0.07	0.22	0.08	0.17	0.08	0.04	0.08	0.08	0.01	0.12	3.77
.60	.22	T.	.14	.16	T.	.....	.04	.34	.06	.09	.15	T.	.27	.02	T.	.09	4.36
.15	.....	T.	.30	.....	.....	.10	.....	.15	.....	.10	.15	.40	T.	T.	.....	.30	6.85
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.80	.03	.03	.04	.03	.03	.....	.04	.20	.10	.19	.08	.01	.16	.02	.04	.18	3.84
1.45	.15	.....	.06	.....	.....	.....	.16	.....	.12	.04	.....	.....	T.	T.	T.	.10	3.64
1.60	.80	.....	.07	.10	.07	T.	.....	.10	.15								

‡ Record for the month incomplete.  
amount for the first eight days interpolated.

## TEMPERATURE AND

STATIONS.	County.	TEMPERATURE—(DEGREES FAHR.).						
		Normal for the month of December.	Length of record, years.	Record begins.	Record ends.	Mean for December, 1893.	Departure from the normal.	EXTREMES MONTHLY MEAN TEMPERATURE FOR DECEMBER
								Highest. Year. Lowest.
<i>Western Plateau.</i>		29.7	...	...	...	27.6	+0.9	...
Angelica*	Allegany	23.0	10	1885	1893	27.3	+1.3	34.3 1889 18.8
Humphrey	Cattaraugus	27.3	11	1883	1893	27.8	+0.5	37.0 1889 20.3
Elmira*	Chemung	26.1	12	1882	1890	...	...	...
<i>Eastern Plateau.</i>		27.4	...	...	...	26.8	-0.6	...
Cooperstown	Otsego	27.0	40	1854	1893	24.9	-2.1	33.9 1891 14.7
Waverly	Tioga	27.7	10	1882	1893	28.6	+0.9	34.6 1889 22.3
<i>Northern Plateau.</i>		23.4	...	...	...	20.8	-2.6	...
Lowville	Lewis	23.4	27	1827	1893	20.8	-2.6	...
<i>Coast Region.</i>		23.0	...	...	...	25.6	+1.2	...
New York City	New York	33.6	23	1871	1893	35.1	+1.5	42.0 1891 25.1
Setauket	Suffolk	35.3	9	1885	1893	36.1	+0.8	41.5 1889 30.6
<i>Hudson Valley.</i>		30.0	...	...	...	28.7	-1.3	...
Albany	Albany	28.5	20	1874	1893	26.0	-2.5	38.7 1881 17.2
Honeymead Brook	Dutchess	28.7	11	1883	1893	27.9	-0.8	35.4 1891 22.5
Poughkeepsie*	Dutchess	30.6	22	1828	1893	29.1	-1.5	...
West Point	Orange	31.6	66	1824	1893	32.6	+1.0	40.2 1829 17.6
Rondout*	Ulster	30.7	25	1828	1893	28.1	-2.6	34.0 1848 18.8
<i>Champlain Valley.</i>		21.9	...	...	...	21.2	-0.7	...
Plattsburgh Barracks.	Clinton	21.9	35	1839	1893	21.2	-0.7	32.2 1891 11.3
<i>St. Lawrence Valley.</i>		23.0	...	...	...	20.1	-3.0	...
Madison Barracks.	Jefferson	24.8	34	1829	1893	22.1	-2.7	36.1 1829 15.4
Canton*	St. Lawrence	22.7	31	1862	1892	...	...	36.5 1881 9.2
North Hammond	St. Lawrence	22.8	15	1866	1893	22.5	-0.3	34.2 1891 13.1
Potsdam*	St. Lawrence	21.8	26	1828	1893	15.8	-6.0	32.1 1829 1.0
<i>Great Lakes.</i>		28.8	...	...	...	27.4	-1.3	...
Buffalo	Erie	29.5	23	1871	1893	28.0	-1.5	37.4 1889 19.4
Rochester	Monroe	28.4	24	1871	1893	27.0	-1.4	36.6 1889 19.5
Fort Niagara	Niagara	29.5	27	1843	1893	30.4	+0.9	38.0 1891 22.5
Baldwinsville	Onondaga	27.2	19	1849	1893	25.8	-1.4	...
Oswego	Oswego	29.0	23	1871	1893	25.0	-4.0	37.2 1881 20.4
Palermo	Oswego	24.9	40	1854	1893	24.1	-0.8	33.8 1891 16.8
Lyons	Wayne	29.3	7	1890	1892	28.3	-1.0	...
Erie, Pennsylvania	Erie	32.4	20	1874	1893	31.0	-1.4	41.0 1889 22.0
<i>Central Lakes.</i>		27.9	...	...	...	28.3	-1.2	...
Geneva*	Ontario	26.3	15	1854	1893	...	...	...
Ithaca.	Tompkins	29.5	15	1879	1893	28.3	-1.2	39.0 1891 22.0
Average departure		...	...	...	...	...	-1.1	...

\* Location of the instruments has been changed



— W A H E E C O W N L C N S E A H P W R C P S M C N P G B R F B O P L E C G I E —

hall

### Scale of Shades.

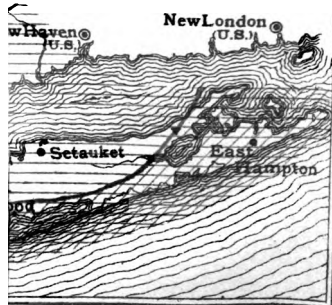
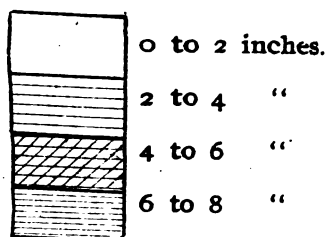




TABLE OF CONTENTS  
A  
B  
C  
D  
E  
F  
G  
H  
I  
J  
K  
L  
M  
N  
O  
P  
Q  
R  
S  
T  
U  
V  
W  
X  
Y  
Z

## FALL STATISTICS FOR DECEMBER, 1893.

STATIONS.	County.	RAINFALL (INCHES).										
		Average for the month of December.	Length of record, years.	Record begins.	Record ends.	Total for December, 1893.	Departure from the av- erage.	EXTREMES OF MONTHLY PRECIPITATION FOR DECEMBER.				
								GREATEST.		LEAST.		
								Amount.	Year.	Amount.	Year.	
<i>Western Plateau</i> ..		2.87				4.64	+1.66					
Angelica .....	Allegany	2.62	7	1856	1893	3.53	-0.91	3.84	1891	1.13	1892	
Humphrey .....	Cattaraugus	3.33	11	1883	1893	5.74	+2.41	5.74	1893	1.14	1892	
Elmira .....	Chemung	2.65	14	1852	1890							
<i>Eastern Plateau</i> ..		2.62				3.71	+1.08					
Cooperstown .....	Otsego	2.70	40	1854	1893	4.02	+1.32	6.02	1881	0.97	1877	
Port Jervis .....	Orange	2.05	10	1880	1893	3.92	+0.87	4.42	1881	1.53	1892	
Waverly .....	Tioga	2.11	11	1882	1893	3.18	+1.07	4.34	1890	0.70	1892	
<i>Northern Plateau</i> ..		2.73				5.81	+3.08					
Lowville .....	Lewis	2.73	25	1827	1893	5.81	+3.08					
<i>Coast Region</i> .....		3.34				3.46	+0.12					
New York City .....	New York	3.28	23	1871	1893	3.49	+0.21	6.66	1884	0.95	1877	
Setauket .....	Suffolk	3.40	9	1885	1893	3.43	+0.03	5.65	1890	1.53	1892	
<i>Hudson Valley</i> .....		3.21				3.06	-0.16					
Albany .....	Albany	3.71	20	1874	1893	2.54	-0.17	5.43	1887	0.71	1877	
Honeymead Brook .....	Dutchess	3.21	10	1884	1893	3.83	+0.62	4.08	1888	1.02	1892	
West Point .....	Orange	3.65	47	1840	1893	2.66	-0.99	6.97	1878	0.83	1867	
Boyd's Corners .....	Putnam	3.15	10	1866	1892			5.96	1869	1.15	1892	
Rondout .....	Ulster	3.32	24	1829	1893	3.20	-0.12	5.06	1830	1.00	1838	
<i>Champlain Valley</i> ..		1.98				3.92	+1.94					
Plattsburgh Barracks .....	Clinton	1.98	34	1840	1893	3.92	+1.94	7.25	1850	0.17	1886	
<i>St. Lawrence Valley</i> ..		2.46				4.54	+2.07					
Malone .....	Franklin	2.90	15	1830	1893	6.21	+3.31					
Madison Barracks .....	Jefferson	2.64	31	1840	1893	3.52	-0.88	6.28	77	78	0.35	1874
North Hammond .....	St. Lawrence	2.53	15	1866	1893	3.53	+1.00	6.11	1866	0.94	1874	
Potsdam .....	"	1.79	24	1828	1893	4.89	+3.10	4.89	1893	0.52	1833	
<i>Great Lakes</i> .....		3.07				3.49	+0.42					
Buffalo .....	Erie	3.33	23	1871	1893	4.36	+1.03	8.55	1878	1.12	1874	
Rochester .....	Monroe	2.84	23	1871	1893	3.84	+1.00	6.17	1878	1.00	1874	
Fort Niagara .....	Niagara	2.07	38	1841	1893	3.05	+0.98	5.97	1852	0.31	1845	
Oswego .....	Oswego	3.28	23	1871	1893	3.84	+0.56	10.49	1878	1.02	1876	
Palermo .....	"	3.77	40	1854	1893	3.22	-0.55	7.95	1878	1.35	1892	
Erie, Pennsylvania .....	Erie	3.13	20	1874	1893	2.65	-0.48	6.44	1881	0.75	1876	
<i>Central Lakes</i> .....		2.36				2.03	-0.25					
Geneva .....	Ontario	2.24	21	1850	1892			6.46	1850	0.70	1867	
Ithaca .....	Tompkins	2.28	15	1879	1893	2.03	-0.25	4.75	1881	0.85	1892	
Average departure .....							+0.91					

during the period covered by the record.



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## SECTION IV.

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TABLES AND MAPS GIVING FOR THE ENTIRE YEAR 1893:

- (1.) THE METEOROLOGICAL SUMMARY OF THE YEAR.
  - (2.) THE MEAN ANNUAL, AND HIGHEST AND LOWEST MEAN PRESSURE AND RANGE; THE SAME ELEMENTS AS ABOVE FOR TEMPERATURE; THE APPEARANCE OF THE SKY AND NUMBER OF RAINY DAYS, ETC.; THE TOTAL, MEAN, GREATEST AND LEAST RAINFALL PER MONTH, AND THE MEAN VALUE OF THE ABOVE ELEMENTS FOR THE YEAR.
  - (3.) THE MONTHLY AND ANNUAL TEMPERATURE AND PRECIPITATION.
  - (4.) THE NORMAL VALUES OF TEMPERATURE AND RAINFALL FOR EACH REGION OF THE STATE, GIVING THE PERIOD COVERED BY RECORDS FROM BEGINNING TO END, OR DATE, WITH THE MEANS, HIGHEST, LOWEST AND RANGES, WITH DEPARTURE FROM THE NORMALS.
  - (5.) CHARTS GIVING THE MEAN ANNUAL TEMPERATURE OF THE STATE FOR THE YEAR 1893, AND GIVING ALSO, THE AMOUNT OF RAINFALL AND CLOUDINESS.
  - (6.) CHARTS SHOWING THE NORMAL AND CURRENT DAILY TEMPERATURE AND PRESSURE THROUGHOUT THE YEAR.
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## Meteorological Summary for the Year 1893.

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The average atmospheric pressure (reduced to sea-level and 32 degrees Fahr.) for the State of New York during the year 1893 was 30.02 inches; the highest monthly mean pressure, 30.11 inches, occurring in February and December and the lowest, 29.87 inches, in May. The highest barometer was 30.92 inches at Albany on December fourteenth; and the lowest was 28.86 inches at Ithaca on October fourteenth, giving a range of 2.06 inches within the State. The highest local monthly mean pressure was 30.14 inches at Rochester in February, and at New York city in December; the lowest being 29.84 inches at Ithaca in May. The greatest local range was 1.99 inches at Ithaca, and the least was 1.74 inches at Albany. The mean annual range for the State was 1.88 inches. The greatest mean monthly departures from the normal were—0.13 inches in January, and + 0.06 inches in March.

The mean annual temperature for the State was 44.6 degrees, as derived from the records of fifty-three stations; the mean temperature of January, the coldest month, being 15 degrees, and of July, the warmest month, 68.9 degrees. The highest monthly mean was 75.0 degrees at New York city in July; and the lowest was 7.2 degrees at Malone in January. The highest annual mean temperature was 51.2 degrees at New York city, and the lowest 39.6 degrees at Number Four, Lewis county. The highest temperature reported during the year was 99

degrees at West Point in June and at Eden Centre in August; and the lowest was 31 degrees below zero at Saranac Lake in December, giving an annual range within the State of 130 degrees. The greatest annual range was 119 degrees at Waverly; and the least was 86 degrees at Dunkirk; the average annual range for all stations being 106 degrees. The average daily range for the year was 19 degrees; the greatest local value being 24 degrees at Poughkeepsie, Mt. Morris and S. Kortright, while the least was 14 degrees at New York city, Buffalo, Oswego and Erie, Pa. The mean annual temperature of the State, as derived from the data of twenty-two stations possessing records for previous years, was 1.1 degrees below the normal. The values were above the normal at only three stations, Waverly, Fort Niagara, and Baldwinsville. The annual temperature at Honeymead Brook, Dutchess county, was the lowest which has occurred at that point during the past ten years.

The average total precipitation over the State for the year was 42.34 inches, as derived from the records of eighty-three regular and special rainfall stations. The maximum total precipitation was 71.05 inches at Eden Centre, Erie county, while the minimum reported was 24.59 inches at Fleming, Cayuga county. The greatest monthly amount over the State was 6.16 inches in August, and the least was 2.13 inches in November. The greatest local monthly precipitation was 12.48 inches at Easton, Washington county, in August; and the least was 0.53 inch at Stillwater, Saratoga county, in November. The total depth of precipitation over the State, and the average daily amounts are shown in detail by succeeding charts. The total precipitation at twenty-one stations possessing records for previous years was 4.75 inches above

the normal amount; being in excess at all stations excepting Albany, Plattsburgh Barracks, Oswego and Palermo. The totals were the largest on record at Honeymead Brook and Rondout.

The average total snowfall at forty well distributed stations was 88.7 inches. The amount over the main portion of the central highlands was about 100 inches; over the northern highlands about 100 to 150 inches; on the coast, 60 inches; in the Hudson valley, 75 to 100 inches; the Champlain valley about 55 inches; the St. Lawrence valley, 65 to 80 inches; the Great Lakes, 75 inches; and the Central Lakes, 60 inches. The greatest snowfall for the State occurred on the highlands east of Lake Ontario, with a maximum of 180 inches at Turin, Lewis county. On a tract east of Lake Erie amounts ranging from 125 to 170 inches were reported.

The average number of days on which the precipitation amounted to 0.01 inch or more, was 128; the maximum number being 182 at Erie, Pa.

The average number of clear days over the State for the year was 101; of partly cloudy days, 125; of cloudy days 139, giving an average of 56 per cent of cloud. The distribution of cloudiness over the State is shown by the accompanying chart.

A review of the data for 1893, given in the reports of the State and National Bureaus, shows that the year, as a whole, was slightly cooler than usual, with excesses of storm frequency and wind travel. The cloudiness and the number of rainy days were slightly below the average values for previous years; but very heavy rates during three storms in May and August brought the total rainfall for the year slightly above the normal amount.

The average monthly temperatures were below the normal during the five months from January to May inclusive, Low



temperatures also obtained during the latter half of December, 1892, and thus the winter as a whole was unusually cold, the average departure for the three months being 4.5 degrees below the normal. The most marked deficiency, 7.5 degrees, occurred during January, ranking this month among the coldest which has occurred since 1857. There was little snow on the ground during this severe weather, but the uniformity of temperature generally prevented material damage to winter grains. During February, the snow covering was sufficient for the protection of crops.

All of the spring months were slightly cooler than usual, with a deficiency of precipitation for March, and an excess during April and May. The first general breaking up of ice in lakes and rivers of the central section occurred in the second week of March; but in the northernmost counties the ground remained frozen until the middle of April. Two very warm periods occurred during May, but the average temperature was deficient, and much cloudy and rainy weather kept the season backward until the close of the month.

The mean temperature of the summer season was higher than usual, the averages for both June and August being in excess, while that of July was normal. Although thunder storms were of frequent occurrence, the total rainfall was generally deficient until August, when the passage of two West India cyclones over the eastern and central parts of the State, respectively, gave heavy rains and violent winds.

The autumn was dry throughout, with a cool September and warmer weather than usual during October and November. October, like August, was notable for the passage of a West India cyclone over the Lower Lake region and central New York,

giving the lowest barometer reading recorded at Ithaca during the past fifteen years.

December opened with low temperatures, which continued until the middle of the month; but thereafter unseasonably warm weather prevailed, making it possible to carry on farm work in the central and southern counties until the close of the month.

**NOTE.**—The fourth chart following this summary shows graphically the mean temperature and rainfall over the State for each day of the past year; and also the normal curve of temperature, constructed from the monthly normals at 56 stations of the State, by means of the harmonic analysis.

The diagram of barometric pressure at Ithaca was constructed from charts of the Draper barograph, after reducing the readings to sea-level.

## METEOROLOGICAL DATA

LOCATION OF STATIONS.			BAROMETER.						TEMPERA		
STATIONS.	County.	Elevation, feet.	Annual mean.	Highest monthly mean.	Month.	Lowest monthly mean.	Month.	Annual range.	Annual mean.	Highest monthly mean.	Month.
<i>Western Plateau</i>									44.5	78.3	July
Alfred Centre	Allegany	1824							43.0	67.6	July
Angelica	"	1340							43.5	66.6	July
Friendship	"	1550							44.3	66.7	July
Humphrey	Cattaraugus	1950							44.4	68.5	July
Arkwright	Chautauqua	1260							44.2	67.5	July
Elmira	Chemung	863								73.3	July
LeRoy	Genesee	888							45.0	70.0	July
Mt Morris	Livingston	625							45.5	69.4	July
Lockport	Niagara	616							46.2	70.9	July
Victor	Ontario	650								71.4	June
Wedgewood	Schuyler	1350							45.2	69.5	July
Addison	Steuben	1000							46.2	69.5	July
South Canisteo	"	1480							44.3	67.1	July
Arcade	Wyoming	1557							42.7	66.5	July
Varysburg	"									67.9	July
<i>Eastern Plateau</i>									44.4	71.2	July
Binghamton	Broome	870							44.9	67.9	July
Oxford	Chenango	1250							44.2	69.0	June
Cortland	Cortland	1120							43.9	67.1	c
South Kortright	Delaware	1700							42.8	65.7	June
Brookfield	Madison	1350							42.7	66.5	June
Middletown	Orange	660							47.2	71.2	July
Port Jervis	"	470							46.7	70.3	July
Cooperstown	Otsego	1300							42.5	66.1	June
New Lisbon	"	1234							42.7	65.2	June
Quaker Street	Schneectady	973									
Perry City	Schuyler	1038							44.0	68.2	July
Waverly	Tioga	825							46.7	70.7	July
Newfield Summit	Tompkins	3050									
Minnewaska	Ulster	1800							44.4	68.4	Aug
<i>Northern Plateau</i>									41.6	67.6	Aug
Lyon Mountain	Clinton	1917									
Amersand	Franklin	1600									
Gloversville	Fulton	803							42.7	67.6	Aug
Constableville	Lewis	1246								64.8	June
Lowville	"	900							41.5	66.9	June
Number Four	"	1571	30.03	30.10	a	29.87	May	1.82	39.6	64.5	June
Turin	"	1240							40.3	64.5	d
<i>Coast Region</i>									50.2	75.0	July
New York City	New York	164	30.04	30.14	Dec.	29.90	May	1.82	51.2	75.0	July
Willet's Point	Queens								49.8	73.6	July
Brentwood	Suffolk	75								72.1	July
Setauket	"	40							49.6	72.2	July
<i>Hudson Valley</i>									45.8	74.6	July
Albany	Albany	85	30.03	30.13	b	29.87	May	1.74	47.0	72.0	e
Lebanon Springs	Columbia	880							43.6	67.4	Aug
Honeymead Brook	Dutchess	450							45.6	68.7	July
Poughkeepsie	"	180							47.0	70.3	Aug
Wappinger's Falls	"									72.2	July
West Point	Orange	167								74.6	July
Boyd's Corners	Putnam	546									
Carmel	"	500									

FOR THE YEAR 1893.

TEMPERATURE—(IN DEGREES FAHR.).						SKY.			PRECIPITATION—(INCHES).						
Lowest monthly mean.	Month.	Maximum.	Minimum.	Annual range.	Mean daily range.	Number of clear days.	Number of partly cloudy days.	Number of cloudy days.	Number of days on which 0.01 or more inches fell.	Total for the year.	Greatest monthly.	Month.	Least monthly.	Month.	Total snow fall.
13.0	Jan...	96	-23	104	21	91	139	135	149	43.82	7.87	May	0.50	June	112.0
13.8	Jan...	93	-10	103	19	68	122	175	94	44.27	5.89	May	1.93	June	94.5
13.9	Jan...	93	-23	116	21	82	158	115	169	39.97	5.65	May	1.79	July	61.9
15.0	Jan...	93	-17	110	23	80	153	132	158	40.22	5.70	May	1.16	Jan	125.0
15.9	Jan...	90	-8	98	20	51	133	181	172	52.42	5.74	Dec	2.56	Nov	125.0
16.1	Jan...														
18.7	Jan...	92	-7	99	18	78	157	130	168	48.58	6.86	Feb	0.50	June	128.5
18.8	Jan...	95	-10	105	24	65	137	163							
16.6	Jan...	94	-5	99	18	92	165	108	117	46.48	7.18	May	2.06	Jan	75.0
17.4	Jan...	96	-6	102											
15.9	Jan...	93	-9	102	22	103	171	91	140	39.95	5.61	Aug	1.60	Nov	74.7
17.4	Jan...	93	-14	107	20	153	135	77	127	35.37	7.87	May	1.24	Nov	45.5
15.6	Jan...	93	-12	105	22	144	64	157	170	44.50	5.84	Apr	2.03	Nov	89.6
13.0	Jan...	90	-9	99	20	85	131	149	133	46.47	7.28	May	1.69	Jan	106.9
		95													
12.8	Jan...	97	-28	105	20	101	127	137	133	43.00	8.44	May	0.77	June	72.6
15.4	Jan...	93	-28	121	22	100	129	186	143	39.93	5.16	May	1.38	Nov	85.8
14.3	Jan...	93	-15	108					150	45.22	7.37	Aug	1.46	Oct	100.0
16.0	Jan...	86	-12	98	15				124	38.65	6.29	May	1.45	June	
15.2	Jan...	92	-14	106	24				93	42.89	7.26	Aug	1.10	Nov	
15.1	Jan...	92	-10	102	20	104	109	152	138	36.39	6.65	Aug	0.77	June	100.0
17.0	Jan...	94	-6	100					126	50.70	8.44	May	1.93	Sept	95.0
16.9	Jan...	93	-12	105	19	124	117	124	126	44.87	7.59	Aug	1.27	Oct	87.5
13.3	Jan...	89	-10	99	18	128	117	120	152	40.89	8.38	Aug	0.95	Nov	81.5
15.4	Jan...	91	-13	104	22	89	115	161	146					100.1	
12.8	Jan...	95	-14	109	21	79	140	146	150	37.90	5.37	May	0.91	Nov	57.2
13.0	Jan...	97	-22	119	23	83	164	118	153	42.31	7.54	May	1.61	Nov	68.2
17.2	Jan...	87	-8	95											
15.6	Jan...	92	-10	102					86	50.22	8.15	Feb	1.60	July	
9.0	Jan...	94	-23	111	20	83	117	165	141	48.20	8.65	Aug	1.34	Nov	
9.7	Jan...		-22												
9.0	Jan...	89	-20	109											
12.7	Jan...	94	-20	114	21	95	88	182	144	41.59	6.81	Feb	1.34	Nov	104.0
9.2	Jan...	88	-23	111											
10.1	Jan...	94	-20	114	21	91	133	141	135	46.31	8.65	Aug	1.69	Oct	107.0
9.1	Jan...	88	-21	109	20	52	120	103	118	50.91	6.63	Aug	2.27	March	136.1
10.1	Jan...	89	-20	109	18	93	126	146	106	54.01	7.09	Aug	1.97	Oct	179.8
10.7	Jan...	97	-12	100	15	120	132	113	117	49.89	7.81	Feb	0.58	June	
12.7	Jan...	96	-1	95	14	110	145	110	138	53.01	7.81	Feb	1.26	July	
12.7	Jan...	97	-6	103	17				94	48.08	7.10	Feb	1.77	July	
12.5	Jan...	97	-12	109											
14.6	Jan...	94	-2	92	15	131	118	116	118	48.65	7.11	Feb	0.58	June	55.5
14.6	Jan...	99	-10	107	20	97	136	132	128	47.27	8.71	Feb	0.91	Nov	61.0
15.6	Jan...	96	-6	102	17	90	140	135	133	36.37	7.21	Aug	0.91	Nov	
15.7	Jan...	91	-13	104	22	73	115	172	120	47.07	6.12	Feb	2.00	Nov	90.9
19.8	Jan...	94	-13	107	19	93	141	131	141	48.67	7.43	Feb	1.82	June	103.5
		98	-19	117	24	127	147	91	115	41.15	7.06	May	1.49	June	61.6
		97							156	51.35	7.37	May	2.09	June	
		99	-8	107	20				104	52.92	8.24	May	1.33	June	81.8

## METEOROLOGICAL DATA

LOCATION OF STATIONS.			BAROMETER.					TEMPERA			
STATIONS	County.	Elevation, feet.	Annual mean.	Highest monthly mean.	Month.	Lowest monthly mean.	Month.	Annual range.	Annual mean.	Highest monthly mean.	Month.
<i>Hudson Val. — (Con.)</i>											
Stillwater .....	Saratoga	150								70.5	June..
Rondout .....	Ulster										
<i>Mohawk Valley.</i>											
Rome .....	Oneida	445							44.6	68.9	June..
Utica .....	"	557							44.6	68.9	June..
										68.8	June..
<i>Champlain Valley.</i>											
Plattsburgh Barracks	Clinton	125							41.6	68.0	July..
Glens Falls .....	"	340							41.6	68.0	July..
<i>St. Lawrence Valley.</i>											
Malone .....	Franklin	810							42.0	69.6	June..
Madison Barracks ..	Jefferson	265							40.4	66.6	June..
Watertown .....	"	498							44.0	69.1	c
										69.6	June..
Canton .....	St. Lawrence	304									
North Hammond .....	"	300									
Ogdensburg .....	"	258							42.6	68.7	June..
Potsdam .....	"	300							41.1	67.9	June..
<i>Great Lakes.</i>											
Dunkirk .....	Chautauqua	590							46.0	73.4	July..
Buffalo .....	Erie	590	30.01	30.11	Feb...	29.85	May	1.97	45.9	68.8	July..
Eden Centre .....	"	590							45.9	70.0	July..
Brockport .....	Monroe	590							45.8	69.6	July..
Rochester .....	Monroe	621	30.03	30.14	Feb...	29.88	May	1.97	46.4	71.0	c
Fort Niagara .....	Niagara	263							48.3	73.4	July..
Hess Road Station ..	"	330									
Baldwinsville .....	Onondaga	390							45.6	71.0	c
Oswego .....	Oswego	304	30.01	30.10	Feb...	29.85	May	1.94	44.3	68.7	July..
Palermo .....	"	480							44.0	69.6	July..
Lyons .....	Wayne	407							46.6	70.7	July..
Erie, Pa. ....	Erie	661	30.08	30.13	Feb...	29.89	May	1.88	47.2	71.0	July..
<i>Central Lakes</i>											
Fleming .....	Cayuga	1000							46.2	72.4	July..
Geneva .....	Ontario	459							46.1	71.7	July..
										71.1	July..
Watkins .....	Schuyler	737								72.4	July..
Romulus .....	Seneca	719							46.6	70.5	c
Ithaca .....	Tompkins	793	30.00	30.10	Feb...	29.84	May	1.99	45.8	69.4	July..
Mean .....			30.02	30.14	f	29.84	May	1.88	44.6	75.0	July..

(a) November and December; (b) October and December; (c) June and July; (d) June interpolated †Mean for March interpolated. ‡Amount for March interpolated.

NOTE.—For methods of deriving mean temperatures see notes under table of monthly and

FOR THE YEAR 1893 — (*Concluded*).

TEMPERATURE — (IN DEGREES FAHR.).						SKY.			PRECIPITATION — (INCHES).						
Lowest monthly mean.	Month.	Maximum.	Minimum.	Annual range.	Mean daily range.	Number of clear days.	Number of partly cloudy days.	Number of cloudy days.	Number of days on which 0.01 or more inches fell.	Total for the year.	Greatest monthly.	Month.	Least monthly.	Month.	Total snowfall.
17.5	Jan...	...	-7	...	...	...	...	...	...	54.39	8.71	Feb...	2.12	July...	...
18.4	Jan...	96	-19	115	...	...	...	...	...	47.70	7.04	Feb...	1.79	June...	...
13.4	Jan...	83	-19	112	...	...	...	...	...	147.70	7.04	Feb...	1.79	June...	...
15.1	Jan...	96	-16	111	...	...	...	...	...	...	...	...	...	...	...
10.8	Jan...	90	-18	108	18	...	...	...	89	28.17	5.76	Aug...	0.68	March...	...
10.8	Jan...	90	-18	108	18	...	...	...	89	28.17	5.76	Aug...	0.68	March...	55.1
11.3	Jan...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
7.2	Jan...	97	-21	110	19	119	112	134	121	38.81	9.98	Aug...	0.75	March...	...
7.2	Jan...	90	-21	111	17	99	93	173	150	42.63	9.98	Aug...	0.86	March...	81.4
11.7	Jan...	97	-19	116	20	...	...	...	126	39.18	9.00	Aug...	1.22	March...	65.6
12.9	Jan...	91	-15	106	...	...	...	...	...	...	...	...	...	...	...
9.1	Jan...	90	-18	108	...	...	...	...	...	...	...	...	...	...	...
10.8	Jan...	...	-20	...	...	...	...	...	...	...	...	...	...	...	...
8.1	Jan...	92	...	...	...	123	143	99	...	181.75	5.83	May...	0.86	March...	...
8.2	Jan...	89	-19	108	...	134	100	131	88	41.72	9.92	Aug...	0.75	March...	78.5
14.1	Jan...	99	-10	98	17	101	101	163	155	41.56	9.49	Feb...	0.94	June...	...
17.4	Jan...	83	-3	86	...	...	...	...	...	...	...	...	...	...	...
16.8	Jan...	90	-5	95	14	49	190	126	177	38.64	4.91	Aug...	1.44	July...	...
15.4	Jan...	99	-10	109	22	119	88	208	151	77.06	9.49	Feb...	3.45	Oct...	171.5
18.2	Jan...	...	-3	...	...	...	...	...	...	...	...	...	...	...	...
17.0	Jan...	97	-6	103	16	101	93	171	197	35.50	5.69	May...	0.94	June...	...
20.4	Jan...	97	0	97	15	...	...	...	101	35.00	5.18	May...	1.89	Jan...	...
...	Jan...	92	...	...	...	...	...	...	...	...	...	...	...	...	...
15.9	Jan...	98	-5	98	18	143	77	145	154	46.22	7.06	July...	1.95	Oct...	77.8
15.6	Jan...	92	-6	98	14	97	80	188	177	34.78	6.47	Aug...	1.16	July...	64.7
14.1	Jan...	98	-9	107	27	119	96	150	150	36.60	5.51	Aug...	1.32	March...	97.6
19.2	Jan...	92	-2	94	16	111	90	164	104	36.25	7.89	Aug...	1.05	Nov...	94.5
18.1	Jan...	90	-5	95	14	69	147	149	182	39.99	7.99	May...	1.13	Sept...	...
16.3	Jan...	96	-12	102	18	98	133	134	120	30.64	6.11	May...	0.56	Nov...	...
17.3	Jan...	94	-5	99	17	...	...	...	...	24.59	5.61	May...	0.66	Jan...	...
18.2	Jan...	96	-7	103	...	...	...	...	...	...	...	...	...	...	...
16.3	Jan...	96	-7	103	...	...	...	...	...	...	...	...	...	...	...
17.9	Jan...	96	-5	101	19	106	137	122	98	29.74	6.11	May...	0.56	Nov...	57.2
17.5	Jan...	93	-12	105	18	90	129	146	143	37.58	6.04	May...	1.25	Nov...	61.3
7.2	Jan...	99	-28	106	19	101	125	139	128	41.91	9.98	Aug...	0.50	June...	...

and August; (e) July and August; (f) February and December. \* Mean for December  
 † Amounts for February and March interpolated.  
 annual temperature and precipitation.

## MONTHLY AND ANNUAL TEMPERATURE

LOCATION OF STATIONS.		TEMPERATURE—							
STATIONS.	County.	January.	February.	March.	April.	May.	June.	July.	August.
<i>Western Plateau</i>		16.0	21.7	30.4	42.5	54.4	67.6	68.7	66.7
Alfred Centre	Allegany	13.8	20.0	27.3	39.7	52.9	65.6	67.6	66.4
Angelica	"	13.9	21.2	29.7	42.1	52.7	65.5	66.6	64.3
Friendship	"	15.0	22.7	31.3	44.2	52.9	66.1	66.7	64.6
Humphrey	Cattaraugus	15.9	21.5	29.8	41.1	53.5	66.4	66.5	66.2
Arkwright	Chautauqua	16.1	21.9	29.0	40.6	51.7	65.5	67.5	65.8
Elmira*	Chemung	18.7	25.5	34.3	46.6	59.4	71.6	73.3	70.7
LeRoy	Genesee	15.8	19.6	29.3	42.5	56.6	69.5	70.0	67.0
Mt. Morris	Livingston	18.3	22.3	31.4	43.4	54.8	67.8	69.4	66.8
Lockport	Niagara	16.6	21.9	32.0	44.5	54.7	69.3	70.9	68.9
Victor	Ontario	17.4	21.0	31.5	42.5	56.4	71.4	71.3	.....
Wedgewood	Schuyler	15.9	21.3	29.7	41.8	55.6	69.3	69.5	69.0
Addison	Steuben	17.4	24.4	32.6	44.6	55.9	67.7	69.5	67.2
South Canisteo	"	15.6	21.5	30.2	42.5	54.8	66.5	67.1	66.1
Arcade	Wyoming	13.0	19.1	27.7	39.8	51.7	65.3	66.5	64.3
Varysburg	"	.....	.....	30.1	41.9	53.8	67.1	67.9	66.8
<i>Eastern Plateau</i>		15.3	20.8	29.2	41.9	54.7	67.3	67.7	67.1
Binghamton	Broome	15.4	21.7	29.4	43.4	54.9	67.7	67.9	66.8
Oxford	Chenango	14.3	19.2	29.6	41.4	54.7	69.0	68.5	67.8
Cortland†	Cortland	16.0	23.4	29.4	41.0	53.9	67.1	67.1	65.9
South Kortright	Delaware	15.2	21.6	28.5	40.7	53.8	65.7	64.9	64.1
Brookfield	Madison	15.1	18.2	27.6	40.1	52.6	66.5	66.3	66.1
Middletown	Orange	17.0	23.8	32.3	45.0	58.0	68.1	71.2	71.0
Port Jervis	"	16.9	23.4	31.7	46.0	57.7	68.6	70.3	70.2
Cooperstown	Otsego	13.9	18.0	27.5	39.1	52.7	66.1	65.6	64.9
New Lisbon	"	15.4	19.5	28.1	40.2	52.6	65.2	64.7	64.7
Quaker Street	Schenectady	12.8	18.5	26.3	39.8	.....	.....	.....	.....
Perry City	Schuyler	15.0	20.4	28.8	41.0	54.7	67.9	68.2	66.9
Waverly	Tioga	17.2	23.7	32.4	44.7	56.4	69.2	70.7	68.7
Minnewaska	Ulster	*15.6	22.2	*27.9	41.5	54.8	66.7	67.5	68.4
<i>Northern Plateau</i>		10.0	16.0	25.3	37.8	51.8	65.5	64.6	64.5
Lyon Mountain†	Clinton	9.7	15.5	24.4	.....	.....	.....	.....	63.6
Amersand	Franklin	9.0	14.5	25.8	36.6	50.7	65.1	64.4	.....
Gloversville	Fulton	12.7	18.1	27.0	40.1	54.0	67.0	67.0	67.6
Constableville	Lewis	9.2	16.4	25.2	37.8	51.0	64.8	63.7	63.6
Lowville	"	10.1	16.7	26.0	38.9	52.6	66.9	65.6	65.2
Number Four	"	9.1	15.0	23.8	36.7	51.4	64.5	62.7	63.4
Turin	"	10.1	15.7	24.0	37.0	51.4	64.5	64.1	64.5
<i>Coast Region.</i>		22.0	29.0	31.8	46.2	57.2	67.8	73.2	72.0
New York city	New York	23.3	29.7	36.0	47.8	59.0	69.0	75.0	74.0
Willet's Point	Queens	22.7	28.6	34.8	46.3	57.0	68.2	73.6	72.2
Brentwood	Suffolk	19.7	28.7	34.2	44.7	55.9	67.5	72.1	70.4
Setauket	"	22.5	28.8	34.2	45.7	56.8	66.6	72.2	71.4
<i>Hudson Valley.</i>		17.1	23.7	31.6	44.6	57.8	68.9	70.5	70.5
Albany	Albany	16.8	21.6	31.4	44.0	58.1	70.0	72.0	72.0
Lebanon Springs	Columbia	14.6	20.8	29.2	40.5	54.2	65.3	66.4	67.4
Honeymead Brook	Dutchess	15.8	21.9	31.1	43.8	56.9	67.2	68.7	68.6
Poughkeepsie	"	15.7	23.8	31.8	46.2	58.2	68.5	69.6	70.3
Wappinger's Falls	"	.....	.....	31.9	45.7	60.2	70.5	72.2	71.3
West Point	Orange	19.8	26.6	33.2	47.7	60.2	70.2	74.6	74.3
Boyd's Corners*	Putnam	19.2	26.8	.....	.....	.....	.....	.....	.....
Carmel	Putnam	17.4	23.1	.....	.....	.....	.....	.....	.....
Stillwater	Saratoga	.....	.....	.....	.....	.....	70.5	70.3	69.3
Rondout†	Ulster	17.5	24.9	33.0	44.2	56.6	.....	.....	.....

## STATE METEOROLOGICAL BUREAU.

283

## AND PRECIPITATION FOR 1893.

(DEGREES FAHR.).					PRECIPITATION — (INCHES).												
September.	October.	November.	December.	Annual mean.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Annual total.
57.2	49.8	36.6	27.0	44.9	2.28	4.02	2.74	3.95	6.40	3.04	3.11	5.22	8.47	8.04	2.17	8.62	45.06
55.8	47.3	34.5	25.4	43.0	4.45	4.15	3.34	2.23	5.59	1.93	3.02	4.95	4.90	8.30	2.98	3.13	44.27
55.6	48.4	34.8	27.3	43.5	2.41	4.37	2.87	4.37	5.65	2.35	1.79	5.23	2.67	2.49	2.12	3.63	39.97
56.4	47.9	36.0	28.3	44.8	1.16	4.96	2.33	4.34	5.70	2.04	2.01	5.33	3.65	3.07	2.12	3.51	40.22
57.0	50.4	36.7	27.8	44.4	2.82	5.52	2.63	5.61	5.42	4.54	3.66	5.82	3.83	4.27	2.56	5.74	52.42
57.1	50.3	37.2	28.0	44.2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
60.4	53.5	.....	.....	.....	0.62	1.61	2.05	3.55	6.94	3.62	3.89	5.54	3.72	2.66	.....	.....	.....
57.3	50.1	37.2	25.5	45.0	3.95	6.86	3.90	3.82	6.18	0.50	3.67	4.89	4.83	2.35	1.76	6.48	45.58
56.7	50.5	37.4	27.1	45.5	.....	.....	.....	3.08	5.62	0.87	1.97	5.20	2.95	1.88	1.10	2.09	.....
59.9	52.0	38.1	25.7	46.2	2.06	3.86	2.62	4.01	7.18	2.54	4.78	5.21	3.43	2.69	3.34	4.77	46.48
57.2	51.2	36.2	26.0	45.2	1.30	.....	.....	3.27	6.19	4.09	4.04	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	2.23	2.49	2.93	3.55	5.37	5.51	3.55	5.61	2.81	2.57	1.60	1.71	39.95
57.6	50.5	37.7	29.5	46.2	1.64	2.27	2.62	3.50	7.87	3.04	2.37	3.69	2.84	2.89	1.24	1.90	35.37
55.9	48.7	35.8	28.2	44.3	2.96	3.58	3.51	5.84	5.25	4.78	2.70	4.13	2.76	4.05	2.03	2.91	44.50
55.2	48.5	35.4	25.9	42.7	1.69	4.60	2.64	4.47	7.23	3.63	2.88	6.55	3.12	3.77	1.95	3.82	46.47
58.1	.....	38.2	26.4	.....	.....	.....	.....	3.21	3.62	5.52	3.08	5.77	4.47	.....	3.27	3.91	.....
56.0	49.6	35.7	26.6	44.3	2.25	4.58	2.72	3.40	6.40	2.67	4.02	6.08	8.73	2.41	1.75	3.08	43.09
56.6	50.9	37.1	27.5	44.9	2.42	4.16	2.80	3.38	5.16	2.58	4.10	4.88	4.50	1.63	1.38	2.91	39.93
55.6	49.3	35.5	26.2	44.2	2.57	4.47	2.58	4.89	6.23	3.70	6.01	7.37	8.94	1.48	1.72	3.28	48.22
56.2	49.1	35.3	25.4	43.9	1.54	2.90	2.32	3.12	6.29	1.45	4.57	4.37	4.17	3.73	1.94	2.36	38.65
53.0	47.4	33.3	26.0	42.8	1.27	4.22	2.62	3.85	5.81	5.76	3.50	7.26	3.76	2.05	1.10	1.99	42.89
56.1	47.6	33.0	23.4	42.7	1.92	3.29	2.68	1.71	5.87	0.77	4.33	6.65	2.62	0.75	1.11	5.29	36.39
58.0	53.2	39.3	29.3	47.2	3.23	6.60	3.86	3.57	.....	.....	2.23	5.68	2.54	3.10	2.59	3.03	.....
58.3	51.8	37.1	28.7	46.7	3.57	5.54	3.80	3.61	8.44	3.79	3.83	5.63	1.93	3.67	3.47	3.92	50.70
54.4	48.2	34.9	24.9	42.5	1.89	4.99	2.13	2.98	6.74	2.30	4.86	7.59	4.01	1.27	2.20	4.02	44.87
53.3	48.6	34.7	25.4	42.7	1.65	4.86	2.12	3.30	4.90	1.97	5.13	8.38	4.05	1.25	0.96	2.38	40.89
.....	.....	.....	.....	.....	1.75	4.90	1.80	3.15	.....	.....	4.99	.....	.....	.....	.....	.....	.....
55.3	48.4	35.5	25.8	44.0	1.75	2.80	2.43	3.58	5.37	2.13	4.99	5.21	4.12	2.74	0.91	1.87	37.90
59.3	51.6	37.5	26.6	46.7	2.25	2.73	2.89	3.89	7.64	1.97	3.55	5.29	5.57	2.84	1.61	3.12	42.31
55.8	49.5	34.9	27.5	44.4	3.45	8.15	3.80	4.20	8.03	3.05	1.60	4.66	3.53	4.99	2.05	2.80	50.22
52.2	48.2	33.0	20.6	40.8	2.16	4.48	1.97	3.52	5.64	3.20	3.34	6.83	3.60	1.96	3.12	5.75	45.82
51.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
54.2	49.0	34.1	22.1	42.7	0.63	2.75	0.70	2.95	3.46	3.12	2.70	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	1.64	6.81	1.81	3.57	6.06	1.95	2.69	5.80	3.94	1.62	1.34	4.33	41.59
.....	.....	.....	.....	.....	.....	4.19	1.87	2.62	4.87	2.93	2.04	6.00	.....	.....	.....	.....	.....
53.1	49.0	33.5	20.8	41.5	2.29	4.08	1.86	3.89	6.78	1.90	2.79	8.65	2.82	1.69	3.75	5.81	46.31
50.3	47.3	32.0	19.5	39.6	2.46	2.44	2.27	3.98	6.30	5.03	4.27	6.63	5.46	2.55	3.60	5.92	50.91
52.3	47.5	32.5	19.9	40.3	3.78	6.33	3.40	4.13	6.39	4.25	2.58	7.09	3.36	1.97	3.80	6.93	54.01
62.0	56.3	43.0	34.7	49.8	3.26	7.34	4.88	5.01	5.33	1.48	1.70	7.02	2.25	4.54	3.34	3.68	49.83
64.0	57.6	44.0	35.1	51.2	3.56	7.81	4.47	6.36	5.06	2.56	1.26	7.18	2.27	5.28	3.71	3.29	53.01
62.6	55.3	41.7	34.1	49.8	2.90	7.10	4.48	5.33	4.55	1.06	1.77	7.65	2.17	4.35	3.06	3.31	48.03
59.3	.....	35.6	.....	.....	3.50	.....	.....	4.75	3.40	5.85	0.80	1.90	7.19	2.55	.....	4.50	.....
62.1	55.9	43.4	36.1	49.6	3.09	7.11	5.83	4.95	5.87	0.58	1.88	6.65	2.02	4.00	3.26	3.43	48.65
58.5	51.8	38.3	27.8	46.8	3.24	7.07	3.47	3.35	6.89	2.24	3.01	6.18	3.62	3.00	2.00	3.55	47.62
59.0	54.0	39.0	26.0	47.0	1.31	4.63	2.00	2.10	5.08	2.92	1.80	7.21	3.20	1.67	0.91	2.54	35.37
55.0	48.5	35.8	25.1	43.6	2.14	6.12	2.77	4.68	5.52	2.67	3.84	5.93	4.52	2.79	2.00	4.09	47.07
56.2	51.4	37.2	27.9	45.6	2.69	7.43	3.08	2.93	7.21	1.88	4.12	5.31	4.53	3.73	1.94	3.88	43.67
58.9	52.3	39.1	29.1	47.0	2.35	6.78	3.12	2.98	7.06	1.49	1.66	4.11	3.43	2.75	1.43	3.59	41.15
59.7	52.9	39.0	29.5	.....	3.10	7.06	4.78	3.43	7.37	2.09	1.18	6.64	3.14	3.53	3.04	4.05	51.35
63.5	.....	40.7	32.6	.....	4.43	7.29	3.94	3.16	8.24	1.33	4.53	6.62	2.84	4.25	3.63	2.66	52.92
.....	.....	.....	.....	.....	4.03	8.05	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
57.1	52.0	37.4	23.7	.....	3.51	7.59	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	38.2	26.1	.....	.....	5.63	8.71	4.60	4.20	7.78	2.91	2.12	5.50	4.23	3.32	2.20	3.29	54.39



## MONTHLY AND ANNUAL TEMPERATURE

LOCATION OF STATIONS.		TEMPERATURE—							
STATIONS.	County.	January.	February.	March.	April.	May.	June.	July.	August.
<i>Mohawk Valley</i> .....		14.2	18.0	28.2	42.4	57.2	68.8	67.7	68.4
Rome .....	Oneida .....	13.4	16.7	28.2	43.7	59.6	68.9	67.1	68.5
Utica .....	.....	15.1	19.8	28.2	41.2	54.8	68.8	68.2	68.3
<i>Champlain Valley</i> .....		11.0	16.0	25.8	37.6	53.4	66.3	68.0	65.4
Plattsburgh Barracks .....	Clinton .....	10.8	13.8	23.3	37.6	53.4	66.3	68.0	65.4
Glens Falls .....	Warren .....	11.3	18.1	28.4	.....	.....	.....	.....	.....
<i>St. Lawrence Valley</i> .....		9.7	15.6	27.5	39.4	54.4	68.9	67.5	67.3
Malone .....	Franklin .....	7.2	13.0	25.0	37.1	52.6	66.6	65.5	65.1
Madison Barracks .....	Jefferson .....	11.7	17.5	27.8	39.8	54.7	69.1	69.1	69.0
Watertown .....	.....	12.9	19.1	28.8	40.3	.....	69.6	69.2	68.0
Canton .....	St. Lawrence .....	9.1	14.6	27.8	39.6	55.1	69.8	.....	.....
North Hammond .....	.....	10.8	16.1	29.0	40.8	56.0	70.9	.....	.....
Ogdensburg .....	.....	*8.1	14.8	28.1	40.1	54.4	68.7	68.5	67.8
Potsdam .....	.....	8.2	13.8	26.2	38.2	53.4	67.9	66.3	66.7
<i>Great Lakes</i> .....		17.1	22.0	31.1	42.3	54.4	68.5	70.4	68.4
Dunkirk .....	Chautauqua .....	17.4	22.2	30.9	41.4	51.6	65.9	68.8	66.9
Buffalo .....	Erie .....	16.8	21.0	30.5	41.0	52.7	67.0	70.0	69.0
Eden Centre .....	.....	15.4	24.0	32.0	44.0	55.0	68.8	69.6	68.2
Brockport .....	Monroe .....	18.2	22.8	31.2	43.0	57.2	.....	.....	.....
Rochester .....	Monroe .....	17.0	21.4	31.2	42.4	56.0	71.0	71.0	69.0
Fort Niagara .....	Niagara .....	20.4	25.0	34.4	43.6	54.2	69.0	73.4	71.6
Hess Road Station .....	.....	.....	.....	.....	.....	.....	.....	70.3	67.2
Baldwinsville .....	Onondaga .....	15.9	19.8	29.8	42.4	56.4	71.0	71.0	69.1
Oswego .....	Oswego .....	15.6	19.8	28.9	39.9	52.4	66.3	68.7	67.6
Palermo .....	.....	14.1	19.0	28.3	40.7	53.9	68.5	69.6	67.5
Lyons .....	Wayne .....	19.2	22.8	31.5	42.8	56.1	69.9	70.7	68.7
Erie, Pennsylvania .....	Erie .....	18.1	24.0	36.0	44.0	54.0	68.0	71.0	68.0
<i>Central Lakes</i> .....		17.4	22.3	31.2	43.8	56.0	69.4	71.0	69.7
Fleming .....	Cayuga .....	17.3	21.3	30.1	42.1	55.9	69.0	71.7	69.6
Geneva .....	Ontario .....	18.2	21.9	31.7	44.2	56.6	69.8	71.1	68.7
Watkins .....	Schuyler .....	16.3	22.3	32.5	43.5	55.4	69.2	72.4	72.1
Romulus .....	Seneca .....	17.9	22.8	30.8	43.8	56.0	70.0	70.5	70.5
Ithaca .....	Tompkins .....	17.5	23.0	30.8	43.0	56.1	68.9	69.4	67.6
Means for the State .....	.....	15.0	20.5	29.5	41.8	55.1	67.9	68.9	68.0

\* Mean temperatures are derived from tri-daily observations. † Mean temperatures are interpolated. All means not otherwise indicated are derived from the maximum and minimum.

NOTE.—The mean temperature and average total precipitation for the several regions are

## AND PRECIPITATION FOR 1893 — (Concluded).

(DEGREES FAHR.).					PRECIPITATION — (INCHES).												
September.	October.	November.	December.	Annual mean.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Annual total.
56.7	51.2	37.0	23.6	44.4	1.96	7.42	8.16	3.72	7.16	2.07	4.14	6.62	3.54	2.56	2.10	5.43	49.88
56.7	51.2	37.0	23.6	44.6	2.00	7.04	8.16	3.97	6.47	1.79	2.96	6.68	3.54	2.56	2.10	5.43	47.70
.....	.....	.....	.....	.....	1.92	7.79	8.16	3.48	7.84	2.35	5.32	6.57	.....	.....	.....	.....	.....
54.6	49.0	35.2	21.2	42.0	1.53	3.52	1.29	2.11	3.26	2.42	3.34	5.76	3.00	0.85	1.28	3.92	39.28
54.8	49.0	35.2	21.2	41.6	0.89	1.54	0.78	2.11	3.26	2.42	3.34	5.76	2.12	0.85	1.28	3.92	28.17
54.3	.....	.....	.....	.....	2.17	5.50	1.90	.....	.....	.....	.....	3.87	.....	.....	.....	.....	.....
55.0	50.6	36.7	18.4	42.6	2.11	2.49	1.06	3.04	5.68	2.96	3.05	8.42	2.47	1.17	2.08	4.49	38.93
52.8	49.7	34.3	15.8	40.4	1.66	2.52	0.85	3.44	4.05	3.09	5.17	9.94	2.71	1.30	1.45	6.21	42.63
58.1	51.2	38.6	22.1	44.0	2.79	2.35	1.22	3.98	5.59	1.66	2.36	9.00	2.28	1.74	2.74	3.52	39.18
.....	.....	.....	.....	.....	2.88	3.39	1.81	.....	.....	2.88	2.30	9.20	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	1.65	1.94	0.92	2.29	7.21	3.05	.....	.....	.....	.....	.....	.....	.....
.....	.....	39.0	22.5	.....	2.28	1.83	0.98	3.52	6.03	1.96	.....	6.75	.....	.....	2.28	3.53	.....
56.3	51.7	37.1	16.6	42.6	2.98	2.41	0.88	1.95	5.82	2.30	1.20	5.69	1.88	0.63	1.88	4.30	31.75
52.6	49.6	34.4	15.8	41.1	1.07	2.99	0.75	3.07	5.38	5.00	2.98	9.92	3.00	1.02	2.05	4.89	41.72
59.2	52.0	38.9	27.3	46.0	2.26	4.33	2.27	3.63	5.48	2.68	2.90	5.46	2.55	2.55	2.47	3.89	40.47
59.3	51.3	39.6	.....	.....	1.36	3.99	1.84	3.70	4.33	3.40	1.94	5.60	1.79	3.80	2.86	.....	.....
61.0	54.0	40.0	28.0	45.9	2.33	4.21	2.62	4.49	4.76	1.65	1.44	4.91	2.71	2.53	2.63	4.36	35.64
60.1	49.1	38.8	24.9	45.8	3.80	9.49	6.18	6.92	8.13	4.86	4.38	5.96	5.46	3.45	5.59	6.85	71.05
.....	52.6	38.7	.....	.....	2.01	3.52	2.16	3.62	4.99	.....	.....	.....	.....	1.85	1.00	.....	.....
59.0	53.0	39.0	27.0	46.4	1.50	3.31	1.81	3.97	5.69	0.94	2.87	5.61	2.20	1.83	1.93	3.84	35.50
62.1	54.1	41.2	30.4	48.3	1.89	2.24	2.21	3.70	5.18	2.02	2.78	4.85	2.04	2.62	2.42	3.05	35.00
58.3	50.4	39.4	28.5	.....	.....	.....	.....	.....	.....	.....	2.74	4.48	2.45	2.69	2.68	4.12	.....
58.1	51.0	37.3	25.8	45.6	2.22	5.78	2.56	4.38	5.12	2.87	7.05	5.15	2.63	1.95	2.11	4.40	46.22
57.2	52.0	38.2	25.4	44.3	2.06	2.11	1.23	3.17	4.53	2.90	1.16	6.47	2.81	2.26	2.94	3.84	44.78
55.7	50.2	35.9	24.1	44.0	3.07	3.99	1.32	3.66	4.72	2.26	1.49	5.51	2.80	2.24	2.32	3.22	38.60
58.1	51.9	39.2	28.3	46.6	2.23	3.18	1.22	1.67	4.88	3.25	4.24	7.59	2.03	1.91	1.65	2.50	36.25
62.0	54.0	40.0	31.0	47.2	2.40	5.85	1.89	3.67	7.99	3.20	1.79	3.61	1.13	3.84	1.97	2.65	39.99
59.4	51.9	39.2	29.0	46.6	1.17	2.12	1.63	3.27	5.45	2.02	1.79	3.97	3.27	1.65	1.01	1.76	29.11
57.9	52.3	38.5	27.3	46.1	0.66	1.30	1.25	2.62	5.61	1.22	3.67	2.01	2.86	0.98	1.45	1.36	24.59
.....	52.6	39.2	.....	.....	1.54	2.98	1.56	3.94	5.11	3.13	3.23	4.53	.....	1.88	.....	.....	.....
63.6	.....	42.9	.....	.....	1.24	0.92	1.97	2.96	4.36	2.41	2.51	3.25	3.07	.....	0.77	.....	.....
58.6	51.7	38.8	28.3	46.6	1.10	2.49	1.90	3.02	6.11	1.41	2.20	4.15	3.26	1.65	0.56	1.89	29.74
57.4	51.0	36.6	28.3	45.8	1.32	2.93	2.49	3.79	6.04	2.21	5.13	3.86	4.38	2.15	1.25	2.08	37.58
57.1	51.0	37.4	25.5	44.8	2.22	4.73	2.52	3.50	5.77	2.47	3.04	6.16	3.18	2.37	2.13	3.92	42.01

derived from the maximum and minimum by the Draper thermograph. † Wholly or in part by the ordinary self-registering instruments.

derived from the monthly values for the region.

## SPECIAL RAINFALL STATIONS — MONTHLY

STATIONS.	County.	January.	February.
Bethlehem Centre.....	Albany.....	1.68	.....
Bolivar.....	Allegany.....	.....	.....
Chenango Forks.....	Broome.....	1.70	3.80
Little Valley.....	Cattaraugus.....	.....	.....
Cherry Creek.....	Chautauqua.....	8.52	9.22
Pine City.....	Chemung.....	.....	.....
West Chazy.....	Clinton.....	1.08	2.44
Bovina Centre.....	Delaware.....	.....	.....
Deposit.....	Delaware.....	3.25	3.70
Akron.....	Erie.....	2.08	4.38
Ausable Forks.....	Essex.....	.....	.....
Adams Centre.....	Jefferson.....	1.85	3.37
Avon.....	Livingston.....	0.55	2.86
Boonville.....	Oneida.....	.....	.....
Apulia.....	Onondaga.....	.....	.....
Warwick.....	Orange.....	.....	.....
Lyndonville.....	Orleans.....	0.92	2.23
Demster.....	Oswego.....	2.25	2.49
Phoenix.....	Putnam.....	2.49	3.75
South East Reservoir.....	Putnam.....	8.21	.....
Schodack Depot.....	Rensselaer.....	1.78	.....
De Kalb Junction.....	St. Lawrence.....	1.86	2.21
Galway.....	Saratoga.....	1.65	6.22
Kings Station.....	.....	2.90	6.85
Atlanta.....	Steuben.....	0.93	0.96
Liberty.....	Sullivan.....	.....	.....
Newark Valley.....	Tioga.....	1.40	2.86
Ellis.....	Tompkins.....	1.34	1.75
Easton.....	Washington.....	1.10	4.56
Bedford.....	Westchester.....	4.03	7.27
Attica.....	Wyoming.....	.....	.....
Castile.....	.....	.....	.....

## AND ANNUAL RAINFALL FOR 1893.

March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Annual total.
2.15	4.49 2.37 4.28		3.21	2.15	4.12 4.48	3.65 3.29	2.58	1.83	4.03	
3.28	5.08	5.20	3.68	2.40	5.75	2.98	5.75	4.91	6.29	63.02
0.87	2.57	3.12	3.61	4.16	8.71 7.73 10.56	4.20 1.55 4.66	2.95 1.57 4.04	1.59 1.09 3.86	2.26 3.46 6.35	38.25
2.07 2.27									2.60	
1.47	3.77	7.20	2.77	4.17	4.70					
2.62	2.41	4.00	1.02 2.63	1.83	7.66	3.17	2.18	3.14	6.07	
					7.75	2.34	2.87	3.18	3.07	
1.87 1.22 1.80	3.63 3.79	5.89 5.28	3.77 3.83	1.84 7.09	4.80 4.83	4.31 2.32	2.54 1.62	3.66 1.83	3.05 3.30	37.85 41.93
1.29		6.38	2.37	5.44	9.14	3.13	1.36	2.55	5.01	
2.65	3.18	6.06	1.52	5.11	11.25	3.65	1.97	1.25	4.52	50.91
1.74	3.68	7.33 5.43	3.04	2.32	7.47 4.39	3.53	2.20	1.27	2.15	37.12
2.70 1.77	3.49 2.55	6.66 6.30	1.76 3.48	4.00 5.07	5.17	5.96 4.17	2.68 2.15	0.75 1.39	2.80 1.47	40.23
1.91 4.25	3.11 4.12	3.89 7.53	3.63 1.99	5.45 3.38	12.48 7.72	5.08 2.59	2.45 6.07	1.16 3.78		
		6.68	1.46	1.97	7.34					

## TEMPERATURE AND RAIN

STATIONS.	County.	TEMPERATURE—(DEGREES FAHR.).									
		Annual normal.	Length of record, years.	Record begins.	Record ends.	Mean for the year 1893.	Departure from the normal.	EXTREMES OF ANNUAL MEAN TEMPERATURE.			
								Highest.	Year.	Lowest.	Year.
<i>Western Plateau</i> .....		45.4	...	...	...	44.0	-0.5	...	...	...	...
Angelica*	Allegany	44.0	10	1854	1893	43.5	-0.5	...	...	...	...
Humphrey	Cattaraugus	44.9	10	1854	1893	44.4	-0.5	47.0	1890	42.6	1885
Elmira*	Chemung	47.3	11	1850	1891	...	...	...	...	...	...
<i>Eastern Plateau</i> .....		45.0	...	...	...	44.6	-0.4	...	...	...	...
Cooperstown	Otsego	43.9	39	1854	1893	42.5	-1.4	46.9	1870	41.5	1875
Waverly	Tioga	46.2	10	1833	1893	46.7	+0.5	48.0	1891	43.8	1885
<i>Northern Plateau</i> .....		43.5	...	...	...	41.5	-2.0	...	...	...	...
Lowville	Lewis	43.5	27	1827	1893	41.5	-2.0	...	...	...	...
<i>Coast Region</i> .....		50.8	...	...	...	50.4	-0.4	...	...	...	...
New York City	New York	51.5	23	1871	1893	51.2	-0.3	54.0	1891	48.6	1875
Setauket	Suffolk	50.2	8	1886	1893	49.6	-0.6	51.8	1889	48.8	1888
<i>Hudson Valley</i> .....		49.0	...	...	...	46.5	-1.7	...	...	...	...
Albany	Albany	48.0	20	1874	1893	47.0	-1.0	51.4	1881	43.6	1875
Honeymead Brook	Dutchess	47.0	10	1884	1893	45.6	-1.4	49.4	1889	45.6	1893
Poughkeepsie*	"	49.8	22	1828	1893	47.0	-2.8	...	...	...	...
West Point	Orange	50.8	46	1824	1889	...	...	55.1	1870	46.8	1875
Rondout*	Ulster	49.3	23	1829	1892	...	...	51.5	'30-'42	45.9	1836
<i>Champlain Valley</i> .....		43.5	...	...	...	41.6	-1.9	...	...	...	...
Plattsburgh Barracks*	Clinton	48.5	31	1839	1893	41.6	-6.9	46.4	1870	40.4	1875
<i>St. Lawrence Valley</i> .....		45.1	...	...	...	42.6	-2.5	...	...	...	...
Madison Barracks	Jefferson	48.0	26	1824	1893	44.0	-4.0	49.5	1826	43.0	1872
Canton*	St. Lawrence	44.2	30	1862	1892	...	...	47.2	1878	40.4	1875
North Hammond	"	44.8	11	1867	1892	...	...	49.5	1870	42.8	1892
Potsdam*	"	43.4	25	1828	1893	41.1	-2.3	...	...	...	...
<i>Great Lakes</i> .....		46.8	...	...	...	46.0	-0.7	...	...	...	...
Buffalo	Erie	46.4	23	1871	1893	45.9	-0.5	48.8	1878	42.7	1875
Rochester	Monroe	46.7	22	1871	1893	46.4	-0.3	49.6	1878	43.7	1885
Fort Niagara	Niagara	47.7	25	1829	1893	48.3	+0.6	49.4	1890	46.2	'60-'67
Baldwinsville	Onondaga	45.4	19	1849	1893	45.6	-0.2	...	...	...	...
Oswego	Oswego	46.5	23	1871	1893	44.3	-2.2	51.2	1878	42.2	1885
Palermo	Oswego	44.8	34	1860	1893	44.0	-0.8	47.8	1878	41.0	1885
Lyons	Wayne	48.5	6	1861	1893	46.6	-1.9	...	...	...	...
Erie, Pennsylvania	Erie	48.7	20	1874	1893	47.2	-1.5	50.4	1880	46.3	1888
<i>Central Lakes</i> .....		47.1	...	...	...	45.8	-1.1	...	...	...	...
Geneva*	Ontario	47.3	18	1852	1892	...	...	...	...	...	...
Ithaca	Tompkins	46.9	15	1879	1893	45.8	-1.1	49.5	1891	44.3	1885
Average departure ..			...	...	...		-1.1	...	...	...	...

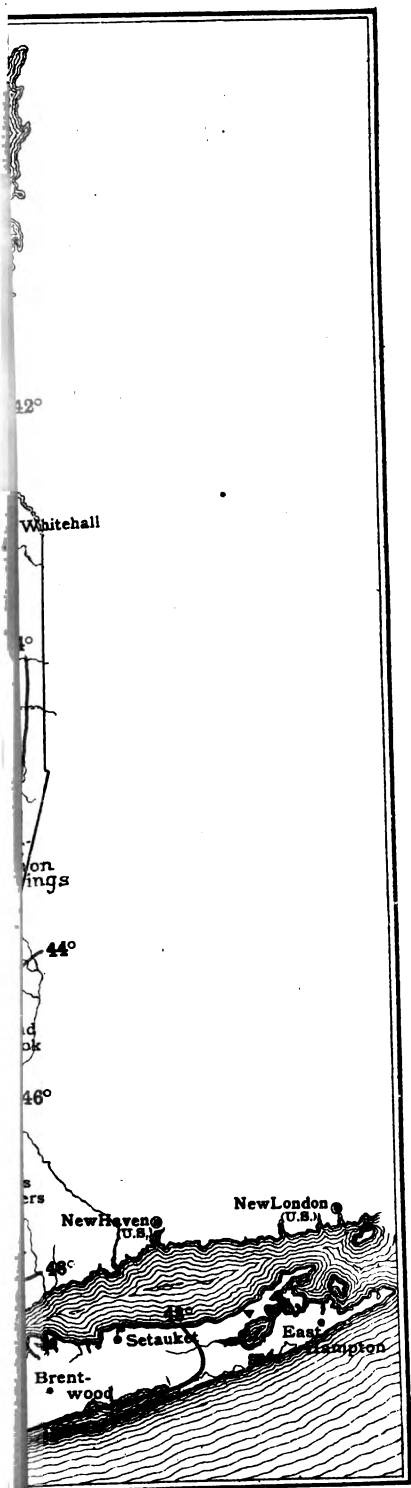
\* Location of the instruments has been changed

## FALL STATISTICS — ANNUAL.

STATIONS.	County.	RAINFALL (INCHES).									
		Annual normal	Length of record, years	Record begins.	Record ends	Total for the year 1893.	Departure from the normal.	EXTREMES OF ANNUAL PRECIPITATION.			
								Greatest.	Year.	Least.	Year.
<i>Western Plateau.</i>		39.84				46.20	+4.31				
Angelica	Allegany	36.59	6	1854	1893	39.97	+3.47				
Humphrey	Cattaraugus	47.27	11	1883	1893	52.42	+5.15				
Elmira	Chemung	35.74	10	1852	1891						
<i>Eastern Plateau.</i>		39.92				45.96	+6.04				
Cooperstown	Otsego	38.77	39	1854	1893	44.87	+6.10	58.11	1830	29.90	1864
Port Jervis	Orange	42.55	9	1880	1893	50.70	+7.15	55.05	1890	31.90	1880
Waverly	Tioga	37.43	10	1883	1893	42.31	+4.88	48.49	1890	28.23	1884
<i>Northern Plateau.</i>		34.86				46.31	+11.45				
Lowville	Lewis	34.86	25	1827	1893	46.31	+11.45				
<i>Coast Region.</i>		47.12				50.83	+3.71				
New York City	New York	45.25	23	1871	1893	53.01	+7.76	57.68	1889	36.16	1879
Setauket	Suffolk	48.99	8	1886	1893	48.65	-0.34	53.94	1890	39.41	1892
<i>Hudson Valley.</i>		42.92				47.84	+6.49				
Albany	Albany	37.89	20	1874	1893	35.37	-2.52	45.43	1890	32.24	1880
Honeymead Brook	Dutchess	41.68	10	1884	1893	48.67	+6.99	48.67	1893	34.48	1886
West Point	Orange	45.91	40	1840	1894	52.92	+7.01	63.56	1853	28.37	1844
Boyd's Corners	Putnam	49.22	9	1867	1892			53.79	1889	44.63	1870
Rondout	Ulster	39.92	24	1829	1893	54.39	+14.47	54.39	1893	32.75	1840
<i>Champlain Valley.</i>		28.96				28.17	-0.79				
Plattsburgh Barracks	Clinton	28.96	32	1840	1893	28.17	-0.79	43.90	1850	18.91	1887
St. Lawrence Valley.		33.66				41.16	+8.81				
Malone	Franklin	36.68	13	1830	1893	42.63	+5.95				
Madison Barracks	Jefferson	29.41	25	1841	1893	39.13	+9.72	40.71	1892	22.26	1879
North Hammond	St. Lawrence	37.62	10	1867	1892			46.71	1867	27.00	1874
Potsdam	"	30.95	23	1828	1893	41.72	+10.77	52.39	1889	18.54	1836
<i>Great Lakes.</i>		35.34				36.75	+1.46				
Buffalo	Erie	38.44	23	1871	1893	38.64	-0.20	60.24	1878	30.44	1874
Rochester	Monroe	33.66	23	1871	1883	35.50	+1.84	49.89	1873	20.30	1887
Fort Niagara	Niagara	28.10	29	1842	1893	35.00	+6.90	50.49	1852	16.71	1884
Oswego	Oswego	35.53	23	1871	1893	34.78	-0.75	55.83	1878	27.61	1872
Palermo		36.92	33	1860	1893	36.60	-0.32	49.40	1864	24.19	1884
Erie, Pennsylvania	Erie	39.9	20	1874	1893	39.99	-0.60	55.23	1878	30.24	1891
<i>Central Lakes.</i>		33.97				37.58	+3.29				
Geneva	Ontario	33.65	15	1855	1892			44.27	1890	21.77	1867
Ithaca	Tompkins	34.29	15	1879	1893	37.58	+3.29	46.39	1890	19.74	1879
Average departure.							+4.75				

during the period covered by the record.

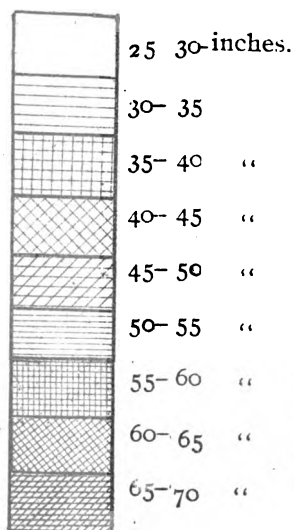








# Whitehall Scale of Shades.



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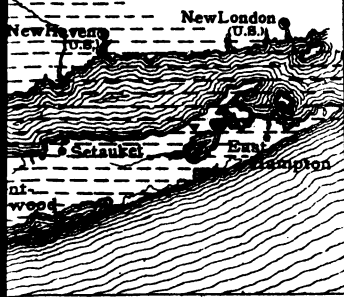
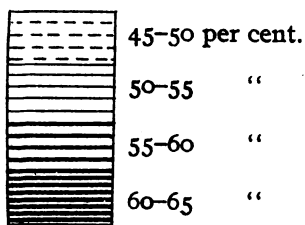
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### Scale of Percentages of Cloudiness.



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## SECTION V.

CONTAINS (1.) A LIST OF THE COUNTIES IN WHICH OBSERVERS HAVE BEEN FOUND, GIVING THE NAME OF THE STATION AND OF THE OBSERVER, WITH THE LATITUDE, LONGITUDE AND ELEVATION OF THE STATIONS, REFERENCES TO THE PLACE WHERE THE STATIONS ARE DESCRIBED IN DETAIL; THE DATE OF THE ESTABLISHMENT OF EACH STATION, AND THE CLIMATIC REGION OF THE STATE IN WHICH THE STATIONS HAVE BEEN CLASSIFIED.

(2.) A LIST OF PERSONS REPORTING THE CONDITION OF THE CROPS EACH WEEK.

(3.) A LIST OF STATIONS DISPLAYING THE WEATHER FORECASTS.

(4.) A SAMPLE OF THE CROP BULLETIN.

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LIST OF OBSERVERS AND STATIONS, GIVING THE COUNTY, POSITION, ALTITUDE, DESCRIPTION AND DATE OF ESTABLISHMENT.

COUNTY.	Station.	Name of observer.	Latitude.	Longitude.	Elevation, feet.	Description, page.	Established.	Region.
Albany	Albany	U. S. Weather Bureau	42° 40'	73° 45'	85			Hudson valley.
Albany	Bethlehem Centre	L. H. Myers	42° 31'	73° 48'			May, 1890	Hudson valley.
Albany	Waterloo Arsenal	Post Surgeon U. S. A.	42° 47'	73° 40'			?	Hudson valley.
Albany	Alfred Centre	Prof. F. S. Place	42° 16'	77° 55'	1,384	309	November, 1888	Western plateau.
Allegany	Angelica	Prof. John P. Slocum	42° 18'	78° 02'	1,340		April, 1890	Western plateau.
Allegany	Bolivar	Dr. Doer Cutler	42° 04'	78° 12'			May, 1890	Western plateau.
Allegany	Canaseraga	H. J. Davis	42° 28'	77° 50'	1,275			Western plateau.
Broome	Binghamton	State Hospital	42° 07'	75° 53'	870	315	October, 1889	Eastern plateau.
Broome	Chemungo Forks	Dr. Z. A. Sandley	42° 15'	75° 53'			May, 1890	Eastern plateau.
Cattaraugus	Humphrey	Charles E. Whitney	42° 12'	75° 34'	1,360	309	1888-89	Western plateau.
Cattaraugus	Limestone	M. W. Wagner	42° 02'	78° 40'			May, 1890	Western plateau.
Cayuga	Wilmington	Robert Warwick	42° 51'	76° 34'	1,000		December, 1889	Central plateau.
Chautauque	Attertitt	Miss L. Wilcox	42° 25'	79° 15'	1,200	310	August, 1890	Western plateau.
Chautauque	Cherry Creek	W. S. Blaisdell	42° 18'	79° 07'			May, 1890	Western plateau.
Chautauque	Dunkirk	Wm. Bolling	42° 29'	79° 20'	600	336	August, 1890	Great lakes.
Chautauque	Jamestown	C. L. Bishop	42° 08'	79° 16'			August, 1890	Western plateau.
Chemung	Shenandoah	Rev. Charles Simpson	42° 10'	79° 37'	1,570		November, 1889	Western plateau.
Chemung	Genesee	Genly Bros.	42° 08'	78° 58'	863	311	November, 1888	Western plateau.
Chemung	Pine City	Dr. H. M. Darling	42° 09'	76° 54'			May, 1890	Western plateau.
Chemung	Attou	A. C. Hyde	42° 13'	75° 53'			May, 1890	Eastern plateau.
Chemung	Oxford	John P. Davis	42° 28'	75° 46'	1,250		December, 1889	Eastern plateau.
Clinton	Lyon Mountain	J. A. Forkey	44° 41'	73° 57'	1,917	321	May, 1890	Northern plateau.
Clinton	West Chazy	W. H. Robinson	44° 45'	73° 38'			October, 1890	Northern plateau.
Clinton	Pittsburgh	Prof. George H. Hudson	44° 49'	73° 27'	150		May, 1890	Champlain valley.
Clinton	Pittsburgh Barracks	Post Surgeon U. S. A.	44° 42'	73° 27'			December, 1890	Champlain valley.
Columbia	Lebanon Springs	Arthur K. Harrison	42° 29'	73° 22'	920	326		Hudson valley.
Cortland	Cortland	Prof. D. L. Bartwell	42° 17'	74° 19'			January, 1892	Eastern plateau.
Delaware	Bovina Centre	F. J. Campbell	42° 04'	75° 27'			July, 1893	Eastern plateau.
Delaware	Deposit	M. R. Hulce	42° 04'	75° 27'			May, 1890	Eastern plateau.
Delaware	South Kortright	D. O. Sharpe	42° 20'	74° 43'	1,700	316	May, 1888	Eastern plateau.
							February, 1890	

Dutchess	Honeshead Brook	James Hyatt	41° 34'	73° 35'	425	327	April, 1890.	Hudson valley.
Dutchess	Lawrence	Ira W. Hoag	41° 41'	73° 35'	338	338	May, 1890.	Hudson valley.
Dutchess	Poughkeepsie	Vassar College	41° 41'	73° 35'	337	337	May, 1890.	Hudson valley.
Dutchess	Wappingers Falls	H. O. Townsend	41° 38'	73° 35'	336	336	February, 1892.	Great lakes.
Erie	Eden Centre	W. P. Hunt	43° 40'	78° 35'	...	...	December, 1889.	Western plateau.
Erie	Akron	H. A. Wilder	43° 01'	78° 32'	...	...	May, 1890.	Great lakes.
Erie	Buffalo	U. S. Weather Bureau	42° 53'	78° 33'	680	...	U. S. M. post.	Great lakes.
Erie	Fort Porter	Post Surgeon, U. S. A.	42° 53'	78° 34'	...	...	May, 1890.	Northern plateau.
Essex	Au Sable Forks	F. E. Trumbull	44° 25'	73° 28'	...	...	November, 1889.	Northern plateau.
Essex	Keene Valley	J. H. Bailey	44° 09'	73° 30'	1,015	...	...	...
Essex	Port Henry	C. W. Lansing	44° 03'	73° 30'	...	...	...	...
Franklin	Amersand	Otto Ruhl	44° 19'	74° 14'	1,539	...	December, 1888.	Northern plateau.
Franklin	Hiawatha House (Axton)	Chas. H. Wardner	44° 30'	74° 18'	810	334	November, 1892.	Northern plateau.
Franklin	Malone	A. B. Johnson	44° 30'	74° 18'	810	335	November, 1890.	St. Lawrence valley.
Franklin	Saranac Lake	E. R. Baldwin, M. D.	44° 30'	74° 18'	802	332	...	Northern plateau.
Fulton	Glensville	L. W. Chamberlin	43° 04'	78° 33'	648	...	April, 1890.	Western plateau.
Genesee	Alabama	S. S. Parker	43° 04'	78° 33'	...	...	May, 1890.	Western plateau.
Genesee	Batavia	N. Bogus	43° 06'	78° 13'	...	...	...	Western plateau.
Genesee	Le Roy	William E. Annin	43° 58'	78° 02'	...	...	...	Western plateau.
Hamilton	Blue Mountain Lake	John G. Holland	43° 58'	78° 02'	...	...	...	Western plateau.
Herkimer	Bisby Lodge	Henry Studer	43° 00'	75° 04'	480	...	October, 1888.	Mohawk valley.
Herkimer	Ilion	G. A. Trowbridge	43° 00'	75° 04'	...	...	May, 1890.	Great lakes.
Jefferson	Adams Centre	A. E. Cooley	43° 54'	76° 01'	...	...	October, 1890.	St. Lawrence valley.
Jefferson	Madison barracks	Post Surgeon, U. S. A.	43° 54'	76° 01'	386	...	...	Coast region.
Jefferson	Watertown	George A. Fairbanks	43° 57'	75° 54'	486	...	...	Coast region.
Kings	Brooklyn	Prof. W. C. Pectham	40° 41'	73° 53'	107	...	...	Coast region.
Kings	Fort Hamilton	Post Surgeon, U. S. A.	40° 37'	74° 02'	...	...	...	Coast region.
Lewis	Constableville	R. Sanford Miller	43° 32'	75° 27'	1,246	332	November, 1888.	Northern plateau.
Lewis	Lowville	Charles S. Rice	43° 47'	75° 30'	...	...	December, 1889.	Northern plateau.
Lewis	Number Four	Charles Fenton	43° 50'	75° 12'	1,571	333	December, 1888.	Northern plateau.
Lewis	Turin	R. T. Church	43° 38'	75° 25'	1,240	334	December, 1889.	Northern plateau.
Livingston	Avon	S. F. Gould	42° 50'	76° 46'	...	...	May, 1890.	Western plateau.
Livingston	Mount Morris	J. E. White	42° 42'	77° 56'	585	312	June, 1890.	Western plateau.
Madison	Brookfield	D. B. Stillman	43° 48'	75° 30'	1,350	317	December, 1889.	Eastern plateau.
Madison	Chittenango	F. H. Gates	43° 04'	75° 54'	...	...	May, 1890.	Great lakes.
Monroe	Brookport	Dr. F. A. Winne	43° 18'	77° 58'	580	...	February, 1890.	Great lakes.
Monroe	Rochester	U. S. Weather Bureau	43° 08'	77° 42'	621	...	...	Great lakes.
Monroe	Scottsville	Isaac Rudlong	43° 01'	77° 45'	...	...	May, 1890.	Western plateau.
New York	Central park	Daniel Draper, Ph. D.	40° 46'	73° 58'	97	...	Public parks, New York city	Coast region.



## LIST OF OBSERVERS AND STATIONS, GIVING THE COUNTY, POSITION, ETC. — (Continued).

COUNTY.	Station.	Name of observer.	Latitude.	Longitude.	Elevation. feet.	Description. page.	Established.	Region.
New York.....	Fort Columbus.....	Post Surgeon, U. S. A.....	40° 48'	74° 00'	164	.....	.....	Coast region.
New York.....	New York city.....	U. S. Weather Bureau.....	40° 48'	73° 06'	263	.....	.....	Coast region.
Niagara.....	Fort Niagara.....	Post Surgeon, U. S. A.....	43° 16'	79° 06'	263	.....	.....	Great lakes.
Niagara.....	Hess Road Station.....	C. H. Spaulding.....	43° 20'	78° 41'	330	.....	August, 1889.....	Great lakes.
Niagara.....	Lockport.....	W. D. Lovell.....	43° 06'	78° 48'	550	312	December, 1889.....	Western plateau.
Niagara.....	Pendleton Centre.....	Byron Hughes.....	43° 28'	75° 21'	1,135	.....	May, 1893.....	Northern plateau.
Oneida.....	Booneville.....	Dr. H. C. Sutton.....	43° 11'	75° 28'	435	331	October, 1890.....	Mohawk valley.
Oneida.....	Rome.....	Thomas Birt.....	43° 05'	75° 18'	537	.....	May, 1890.....	Mohawk valley.
Oneida.....	Utica.....	W. H. Gifford.....	43° 21'	75° 51'	.....	.....	May, 1890.....	Great lakes.
Oneida.....	West Camden*.....	Wm. H. Tibbit.....	43° 48'	78° 05'	.....	.....	May, 1890.....	Eastern plateau.
Onondaga.....	Apulia.....	S. C. Suydam.....	43° 11'	78° 21'	390	.....	December, 1890.....	Great lakes.
Onondaga.....	Baldwinsville.....	Prof. T. H. Armstrong.....	43° 53'	78° 03'	1,720	.....	September, 1890.....	Eastern plateau.
Onondaga.....	Pompey.....	Prof. H. A. Peck.....	43° 03'	78° 11'	509	.....	October, 1890.....	Great lakes.
Onondaga.....	Syracuse.....	Mrs. N. S. Yates.....	43° 51'	78° 59'	459	.....	December, 1888.....	Central lakes.
Ontario.....	Geneva.....	M. F. Webster.....	43° 59'	77° 28'	650	.....	July, 1891.....	Western plateau.
Ontario.....	Victor.....	State Hospital.....	41° 25'	74° 25'	660	317	January, 1890.....	Eastern plateau.
Orange.....	Middletown.....	Prof. John M. Dolph.....	41° 21'	74° 40'	470	318	November, 1889.....	Eastern plateau.
Orange.....	Port Jervis.....	John W. Sanford.....	41° 14'	74° 31'	.....	.....	May, 1890.....	Eastern plateau.
Orange.....	Warwick.....	Post Surgeon, U. S. A.....	41° 23'	73° 57'	167	.....	.....	Hudson valley.
Orange.....	West Point.....	Prof. F. A. Greene.....	43° 14'	78° 13'	.....	.....	May, 1891.....	Great lakes.
Orleans.....	Albion.....	B. B. Barry.....	43° 27'	78° 25'	.....	.....	May, 1890.....	Great lakes.
Orleans.....	Lyndonville.....	F. W. Squires.....	43° 17'	78° 20'	304	.....	May, 1890.....	Great lakes.
Oswego.....	Demeter.....	U. S. Weather Bureau.....	43° 29'	78° 38'	.....	.....	.....	Great lakes.
Oswego.....	Oswego.....	E. B. Bartlett.....	43° 24'	78° 30'	460	.....	July, 1887.....	Great lakes.
Oswego.....	Palermo.....	I. W. Bennett.....	43° 27'	78° 01'	.....	.....	February, 1890.....	Great lakes.
Oswego.....	Sand Bank.....	G. Pomeroy Keese.....	43° 41'	74° 57'	1,300	319	May, 1890.....	Great lakes.
Oswego.....	Coopers town.....	G. A. Yates.....	43° 35'	75° 15'	1,294	.....	November, 1893.....	Eastern plateau.
Oswego.....	New Lisbon.....	Ray. R. B. Arden.....	41° 24'	73° 58'	157	.....	.....	Hudson valley.
Putnam.....	Ardensia.....	Thomas Manning.....	41° 29'	73° 43'	516	.....	.....	Hudson valley.
Putnam.....	Boy's Corners.....	Thomas Manning.....	41° 25'	73° 40'	500	328	.....	Hudson valley.
Putnam.....	Carmel.....	Post Surgeon, U. S. A.....	40° 48'	72° 45'	.....	.....	.....	Hudson valley.
Putnam.....	Southeast Reservoir.....	.....	.....	.....	.....	.....	.....	Coast region.
Putnam.....	Whit's Point.....	.....	.....	.....	.....	.....	.....	Coast region.

Rensselaer	Stephentown]	R. A. Holcombe	42° 30'	73° 43'	1,000	September, 1890	Hudson valley.
Rensselaer	Schohack Depot]	P. B. Burton	42° 34'	73° 43'	.....	May, 1890	Hudson valley.
Richmond	Fort Wadsworth]	Post Surgeon, U. S. A.	40° 35'	74° 01'	333	November, 1890	Coast region.
St. Lawrence	Canton	Prof. Henry Priest	44° 35'	73° 13'	804	May, 1890	St. Lawrence valley.
St. Lawrence	DeKalb Junction]	C. A. Hallgas	44° 55'	73° 54'	?	.....	St. Lawrence valley.
St. Lawrence	Massena]	Prof. M. H. Kinsley	44° 55'	73° 54'	.....	.....	St. Lawrence valley.
St. Lawrence	North Hammond	C. A. Wooster	44° 30'	73° 40'	340	November, 1888	St. Lawrence valley.
St. Lawrence	Norwood]	B. A. Whitney	44° 38'	73° 00'	.....	May, 1890	St. Lawrence valley.
St. Lawrence	Ogdensburg	State Hospital	44° 43'	73° 30'	356	January, 1891	St. Lawrence valley.
St. Lawrence	Potsdam	G. W. F. Smith	44° 40'	73° 01'	800	December, 1889	St. Lawrence valley.
Saratoga	Galway	J. P. Crouch	43° 01'	74° 03'	.....	June, 1890	Northern plateau.
Saratoga	King's Station	R. E. Croukrite	43° 10'	73° 47'	329	May, 1890	Hudson valley.
Saratoga	Sullivan	Rev. R. J. Thompson	43° 57'	73° 40'	.....	October, 1890	Champlain valley.
Saratoga	Saratoga	Capt. A. R. McNair	43° 06'	73° 40'	370	November, 1889	Eastern plateau.
Schenectady	Quaker Street	Wm. Weaver	43° 44'	71° 12'	973	June, 1890	Eastern plateau.
Schoharie	Hyndsville]	C. P. Bouton	43° 40'	74° 35'	1,163	July, 1888	Eastern plateau.
Schoharie	Middleburgh]	F. X. Straub	43° 40'	74° 30'	640	December, 1889	Eastern plateau.
Schuyler	Perry City	W. H. Jeffers	43° 33'	76° 44'	1,088	December, 1889	Eastern plateau.
Schuyler	Wedgewood	O. F. Corwin	43° 26'	76° 56'	1,350	December, 1889	Western plateau.
Seneca	Romulus	J. H. Coryell	43° 43'	76° 57'	719	August, 1891	Central lakes.
Steuben	Addison	Dr. H. A. Alnsworth	43° 07'	77° 15'	1,000	December, 1890	Western plateau.
Steuben	Blood's Depot	Ass. Adams	43° 36'	77° 31'	.....	May, 1890	Western plateau.
Steuben	Hammondsport	H. O. Fairchild	43° 25'	77° 09'	806	June, 1890	Central lakes.
Steuben	South Canisteo	James E. Wilson	43° 12'	77° 34'	1,480	November, 1889	Western plateau.
Steuben	Brentwood	Dr. W. H. Ross	43° 46'	73° 14'	75	February, 1891	Coast region.
Suffolk	East Hampton]	Dr. J. F. Bell	40° 58'	73° 11'	16	January, 1890	Coast region.
Suffolk	Seatauket	Selah B. Strong	40° 57'	73° 03'	825	January, 1890	Coast region.
Sullivan	Liberty	.....	41° 46'	74° 46'	1,467	May, 1890	Eastern plateau.
Tioga	Apalachin]	Frank B. Tracy	42° 04'	76° 10'	822	.....	Eastern plateau.
Tioga	Newark Valley	M. D. Clinton	42° 14'	76° 13'	966	May, 1890	Eastern plateau.
Tioga	Nichols]	F. O. Lowman	43° 01'	76° 31'	800	May, 1890	Eastern plateau.
Tioga	Waverly	T. P. Yates	43° 01'	76° 34'	885	.....	Eastern plateau.
Tompkins	Ellis	Oscar Snyder	43° 28'	76° 25'	.....	November, 1892	Eastern plateau.
Tompkins	Thaca	College of Civil Eng.	43° 27'	76° 29'	840	.....	Central lakes.
Tompkins	McLean]	Newton Baldwin	43° 35'	76° 19'	.....	May, 1890	Eastern plateau.
Tompkins	Newfield Summit	.....	42° 23'	76° 40'	2,000	October, 1892	Eastern plateau.
Ulster	Marlborough]	E. E. McNamee	41° 37'	73° 59'	300	July, 1890	Hudson valley.
Ulster	Minnewaska]	E. A. Smiley	41° 44'	74° 14'	1,800	November, 1889	Eastern plateau.
Ulster	Rondout	H. A. Stone	41° 55'	73° 58'	330	Nov., 1888	Hudson valley.
Warren	Glens Falls	C. L. Williams	43° 19'	73° 41'	340	October, 1891	Champlain valley.
Warren	Queensbury]	De Witt C. Jenkins	43° 25'	73° 40'	300	November, 1888	Champlain valley.

LIST OF OBSERVERS AND STATIONS, GIVING THE COUNTY, POSITION, Etc. — (Concluded).

COUNTY.	Station.	Name of observer.	Latitude.	Longitude.	Elevation, feet.	Description, page.	Established.	Region.
Washington...	Easton...	H. Tabor...	43° 00'	73° 35'	.....	.....	May, 1890.	Hudson valley.
Washington...	Whitehall...	Prof. W. W. Howe...	43° 33'	73° 24'	115	.....	January, 1893.	Champlain valley.
Wayne .....	Lyons .....	Dr. M. A. Veeder .....	43° 08'	77° 00'	407	383	? Prior to 1888 .....	Great lakes.
Wayne .....	Palmyra	L. D. Cummings .....	43° 05'	77° 09'	740	.....	Not equipped with State ins. ....	Great lakes.
Westchester...	David's Island...	Post Surgeon, U. S. A. ....	40° 52'	73° 46'	.....	.....	.....	Coast region.
Westchester...	Fort Schuyler	Post Surgeon, U. S. A. ....	40° 49'	73° 5'	.....	.....	.....	Hudson valley.
Westchester...	Peekskill .....	Dr. John N. Tilden .....	41° 17'	73° 55'	250	880	November, 1889. ....	Coast region.
Westchester...	White Plains .....	Prof. O. R. Willis .....	41° 05'	73° 40'	273	883	—, 1884. ....	Coast region.
Wyoming .....	Arcade .....	J. D. Tate .....	42° 23'	78° 26'	1,557	314	April, 1890. ....	Western plateau.
Wyoming .....	Attica .....	H. T. Bramer .....	42° 50'	78° 19'	.....	.....	May, 1890. ....	Western plateau.
Wyoming .....	Castile .....	W. E. Pratt .....	43° 47'	78° 20'	.....	.....	February, 1893. ....	Western plateau.
Wyoming .....	Varysburg .....	H. C. Ott .....	.....	.....	.....	315	.....	.....
Yates .....	Italy Hill .....	.....	43° 38'	77° 37'	2,060	.....	July, 1890. ....	Western plateau.
Erle, Penn. ....	Erle .....	U. S. Weather Bureau .....	43° 07'	80° 05'	681	.....	.....	Great lakes.

1 Discontinued.

**LIST OF CROP CORRESPONDENTS AND SPECIAL RAINFALL OBSERVERS  
OF THE NEW YORK STATE WEATHER BUREAU, 1893.**

STATION.	County.	Name.
Albany.....	Albany .....	U. S. Weather Bureau.
Bethlehem Centre....	Albany .....	L. H. Myers.*
Angelica .....	Allegany.....	Prof. J. P. Slocum.
Bolivar.....	Allegany.....	Dr. Dorr Cutler.*
Friendship .....	Allegany.....	H. J. Davis.
Chenango Forks .....	Broome .....	Dr. Z. A. Spendley.*
Humphrey .....	Cattaraugus .....	Chas. E. Whitney.
Little Valley .....	Cattaraugus .....	E. Sweetland.*
Olean.....	Cattaraugus .....	F. N. Godfrey.
Randolph .....	Cattaraugus .....	E. C. Williams.
Sherwood .....	Cayuga .....	W. F. Searing.
Cherry Creek.....	Chautauqua.....	W. S. Blaisdell.*
Dunkirk .....	Chautauqua.....	William Bolling.
Poland Centre.....	Chautauqua .....	Ellen Cheney.
Pine City .....	Chemung .....	H. M. Darling, M. D.*
Brisben .....	Chenango .....	George W. Lenderson.
New Berlin Centre ..	Chenango .....	S. W. Caswell.
West Chazy.....	Clinton .....	W. H. Robinson.*
Canaan Centre.....	Columbia .....	C. E. Cadalso.
Lebanon Springs.....	Columbia .....	Arthur K. Harrison.
Cortland .....	Cortland .....	Frank Donegan.*
Little York .....	Cortland .....	M. H. Gates.
Deposit .....	Delaware .....	M. R. Hulce.*
Bovina Centre.....	Delaware .....	F. J. Campbell.*
Honeymead Brook ...	Dutchess.....	James Hyatt.
Wappinger's Falls....	Dutchess.....	H. C. Townsend.
Akron .....	Erie .....	H. A. Wilder.*
Buffalo .....	Erie .....	U. S. Weather Bureau.
Eden Centre.....	Erie .....	William P. Hunt.
Port Henry .....	Essex .....	W. Lansing & Son.
Malone .....	Franklin .....	Albert B. Johnson.
Johnstown .....	Fulton .....	W. S. Comrie.
Corfu .....	Genesee.....	C. D. Silliman.
Adams Centre .....	Jefferson .....	A. E. Cooley.*
Antwerp .....	Jefferson .....	H. N. Howard.
Carthage.....	Jefferson .....	C. P. McDonald.
Leyden .....	Lewis.....	Dwight W. Miller.

\* Special rainfall observers.

LIST OF CROP CORRESPONDENTS, ETC. — (*Continued*).

STATION.	County.	Name.
Lowville .....	Lewis .....	Charles S. Rice.
Avon .....	Livingston .....	Captain Orange Sackett.*
Mt. Morris .....	Livingston .....	J. E. White.
Canastota .....	Madison .....	J. W. Goodell.
Hamilton .....	Madison .....	A. J. Tracey.
Rochester .....	Monroe .....	U. S. Weather Bureau.
Canajoharie .....	Montgomery .....	Willis Bullock.
New York city .....	New York .....	U. S. Weather Bureau.
Hess Road Station .....	Niagara .....	H. A. Van Wagoner.
Lockport .....	Niagara .....	W. D. Levell.
Boonville .....	Oneida .....	Byron Hughes.*
Clinton .....	Oneida .....	Ira O. Ellinwood.
Taberg .....	Oneida .....	B. Frank Ranney.
Utica .....	Oneida .....	Thomas Birt.
Baldwinsville .....	Onondaga .....	Abel H. Toll.
Oran .....	Onondaga .....	H. J. Haith.
Phelps .....	Ontario .....	Charles Seager.
Victor .....	Ontario .....	M. F. Webster.
Port Jervis .....	Orange .....	Prof. J. M. Dolph.
Warwick .....	Orange .....	John W. Sly*.
Lyndonville .....	Orleans .....	B. B. Barry.*
Demster .....	Oswego .....	F. W. Squires.*
Oswego .....	Oswego .....	U. S. Weather Bureau.
Palermo .....	Oswego .....	E. B. Bartlett.
Cooperstown .....	Otsego .....	G. Pomeroy Keese.
De Kalb Junction .....	St. Lawrence .....	C. A. Hallegas.*
Galway .....	Saratoga .....	J. P. Crouch.*
King's Station .....	Saratoga .....	R. E. Cronkhite.*
Quaker Street .....	Schenectady .....	William Weaver.
Hyndsville .....	Schoharie .....	C. P. Bouton.
Perry City .....	Schuyler .....	W. H. Jeffers.
Wedgewood .....	Schuyler .....	O. F. Corwin.
Addison .....	Steuben .....	Dr. H. R. Ainsworth.
Atlanta .....	Steuben .....	Asa Adams.*
South Canisteo .....	Steuben .....	James E. Wilson.
Setauket .....	Suffolk .....	J. P. David.*
Liberty .....	Sullivan .....	Ed. Tarbell.*
Newark Valley .....	Tioga .....	M. D. Clinton.*

\* Special rainfall observers.

LIST OF CROP CORRESPONDENTS, ETC. — (*Concluded*).

STATION.	County.	Name.
Waverly .. . . . .	Tioga .. . . . .	T. P. Yates.
Ellis .. . . . .	Tompkins .. . . .	Oscar Snyder.*
Easton .. . . . .	Washington .. . .	H. Tabor.*
Whitehall .. . . .	Washington .. . .	W. J. Spink.
Lyons .. . . . .	Wayne .. . . . .	Dr. A. F. Sheldon.
Bedford .. . . . .	Westchester ....	Merritt M. Clark.*
Arcade .. . . . .	Wyoming .. . . .	J. D. Tate.
Attica .. . . . .	Wyoming .. . . .	H. T. Bramer.*
Castile .. . . . .	Wyoming .. . . .	Walter E. Pratt.*
Varysburg .. . . .	Wyoming .. . . .	H. C. Orr.
Penn Yan .. . . . .	Yates .. . . . .	Hallowell & Wise.*
Erie, Pa .. . . . .	Erie, Pa .. . . . .	U. S. Weather Bureau.

\* Special rainfall observers.

# The New York State Weather Bureau, Under Control of the State Commissioner of Agriculture.

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WEATHER CROP BULLETIN ISSUED IN CO-OPERATION WITH THE UNITED  
STATES DEPARTMENT OF AGRICULTURE, WEATHER BUREAU, FOR  
THE WEEK ENDING JULY 8, 1893.

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CORNELL UNIVERSITY, }  
ITHACA, N. Y., *July 11, 1893.* }

The following information has been condensed from the reports of crop correspondents for the week ending with Saturday, July 8, 1893:

Albany county: The rainfall has been well distributed; and the average amount of sunshine has prevailed. Rainfall at Albany, 0.97 inch.

Allegany county: Fine weather. Large hay crop being secured under favorable conditions. Raspberries ripe and plentiful. Rainfall at Angelica, 0.57 inch; Friendship, 0.45 inch.

Broome county: Beneficial week for oats and garden truck. Heavy rain of eighth slightly damaged hay. Rainfall at Chenango Forks, 1.75 inches.

Cattaraugus county: Favorable week. Haying has become general, with prospects for good crop. Oats, corn and potatoes look very well. Berries will be plentiful, but fruit in general will be light. Rainfall at Humphrey, 0.57 inch; Little Valley, 1.45 inches.

Cayuga county: Wheat turning. Haying progressing slowly on account of rains. Much buckwheat was sown as the late spring had not permitted the sowing of many fields in grain. Approximate rainfall at Sherwood (including only to the seventh), 0.62 inch.

Chautauqua county: Frequent showers have somewhat delayed haying in all parts of the county, but it is generally being secured in good condition. Wheat and rye are beginning to color, and are well filled. Oats heading out well. The warm weather and plentiful rains have made small fruits plump and juicy; markets are well supplied with them. Potatoes, where cared for, promise a good yield. Bugs are more numerous than usual. Cherries and currants are being picked in southwest. Rainfall at Dunkirk, 0.63 inch.

Chenango county: Storm of eighth beat corn and potatoes flat down; oats also, but they will straighten up again. Rainfall at New Berlin Center, 3.68 inches, 2.63 inches of which fell on the eighth.

Cortland county: Corn looks well. Hay crop kept back by cold weather. The weather has been favorable for cabbages.

Delaware county: Favorable weather to all crops. Corn and potatoes look well and promise fair crop. Dairy business good.

Dutchess county: Wheat is fair. Rye harvest begun; crop apparently good, but not well filled in some cases. Oats are good in the south, but not so promising in the north. Corn has been kept back by the cool nights, but is generally very good. Haying progresses rather slowly, and the crop is somewhat light in parts. First potatoes dug two weeks ago; crop will likely be good, although the bugs continue very numerous. Grapes look well, although some rot has appeared in the south. Hops are a total failure. Rainfall at Honeymead Brook (Bangall), 1.31 inches; Wappingers Falls, 2.05 inches.

Erie county: Corn is backward but growing rapidly. Some oats struck with rust. Early potatoes are looking well. Buckwheat is up and looks good. Rainfall at Buffalo, 0.40 inch; Eden Center, 0.47 inch.

Franklin county: Favorable for all crops. Corn makes splendid growth. Meadows and pastures have improved. A little hay cut; haying will be general on tenth; crop in north section reported above average; about average in central section. Rainfall at Malone, 0.39 inch.



Fulton county: Corn and potatoes are growing finely. Weather has been showery and bad for haying. Much that was cut was caught by the rain. The crop is a good average.

Jefferson county: Grains, potatoes and gardens growing finely. Haying progressing; crop below last year's. Pastures good. Oats promise a good crop, but corn very backward.

Lewis county: Fine week; corn and potatoes looking fine; oats are heading well and will yield much straw. Haying has well commenced and crop will be large and of good quality. Pastures are good. Apples will be light. Rainfall at Lowville, 1.46 inches.

Livingston county: More rain needed; ground very dry and beans do not grow. Some not up yet. Rainfall at Mt. Morris, 0.45 inch; Avon, 0.40 inch.

Madison county: Crops made good growth. Last of week good for haying, at which farmers are busy and securing a good crop. Terrific storm of eighth, although giving the ground a needed soaking, did much damage. Trees were blown down; some hop yards laid flat; and much injury wrought to early potatoes. Rainfall at Canastota, about 2.05 inches.

Monroe county: Rainfall was badly distributed, and drouth has slightly injured crops. Rainfall at Rochester, 0.82 inch.

New York: Rainfall, 0.32 inch.

Niagara county: Favorable week and crops growing finely. Haying progressing slowly on account of wet weather. Rainfall at Lockport, 0.75 inch; Hess Road Station, 1.20 inches.

Oneida county: Rains have been generally well distributed, and all crops are growing finely. Haying in the northern part will not be general until Monday. Oats will be rather light in the southern part. Wheat nearly ready to harvest. Rainfall at Boonville, 1.41 inches; Utica, 1.83 inches.

Orange county: Rye harvest has begun; fair crop. Haying progressing favorably. Corn making good growth. Cherries and small fruits a good crop. Rainfall at Port Jervis 1.40 inches.

Orleans county: Wheat is ripening; weevil bad on lake shore; late wheat attacked most. Corn, beans and potatoes growing finely. Haying in full blast. Rainfall at Lyndonville, 0.93 inch.

Oswego county: Favorable week, and all crops doing as well as could be expected. Corn and potatoes doing finely. Garden truck doing well. Haying progressing under generally favorable conditions; crop is of fine quality. Strawberry harvest about over; yield not as great as last year, but prices better. Outlook for pears and apples remains discouraging; other fruits fair. Berries good. Pastures good, with much white clover. Dairy interests are fair. Rainfall at Demster, 0.78 inch; Oswego, 0.57 inch.

Otsego county: Occasional showers prevented drouth, but more rain is needed. Haying has begun with general crop a full average, although some old meadows are light. Nights rather too cool for vines and gardens. Rainfall at Coopers-town, 0.49 inch.

Saratoga county: Crops of all kinds are doing well. Rainfall at Kings Station (including Saturday, first), 2.76 inches.

Schuyler county: Favorable week for growing crops, but not for haying. Some has been damaged by the rains. Wheat and rye are ripening rapidly. Hay generally is heavier than appearances indicate, although very full of daisies. Clover is fine. Rainfall at Perry City, 2.92 inches; Wedgewood, 1.19 inches.

Steuben county: All crops are doing well. Buckwheat acreage is small. Haying will be general Monday. Reports as to yield are conflicting, but will probably be much less than last year. Rainfall at Atlanta, 0.91 inch; South Canisteo (to Friday only), 0.33 inch; Addison, 0.60 inch.

Suffolk county: Rainfall badly distributed, and corn, pastures and garden truck are suffering for the lack of rain. Nearly half of the hay crop has been secured. Potatoes in full blossom. Some rye has been cut; wheat almost ripe. Nearly half of the apples are falling off the trees. Rainfall at Setauket, 0.28 inch.

Tioga county: Wheat turning and above the average quality. Corn and oats backward. Cherries abundant; strawberries gone; raspberries ripe and good crop. Some haying done; old meadows light and poor. Clover heavy on new seeding, and mostly housed. Buckwheat generally in. Hail on fifth did

considerable damage to corn, fruit and gardens. Rainfall at Newark Valley, 2.35 inches; Waverly, 0.15 inch.

Tompkins county: Favorable week for growth, but unfavorable for haying. Terrific storm, with some hail, on eighth. No damage reported. Cherries are abundant, and other fruits look well. Rainfall at Ithaca, 2.84 inches, of which 2.70 inches fell in eighteen hours during the eighth. One inch fell in twelve minutes about 1 p. m.

Washington county: Frequent showers and cool nights last two weeks will add fully one-third to the grass and rye crops. Oats will be a full average. Corn and potatoes better than the average at this season. Grapes setting unusually full. Berries abundant. Haying in full blast. Rye cutting began on seventh. Rainfall at Greenwich, 1.30 inches.

Wayne county: Beneficial rains, and grass and grains made rapid improvement. Clover is heavy; timothy rather light. Potatoes looking well. Rather too cool for corn and it is small. Wheat promises a large crop. Cherries are plentiful; raspberries ripening and a large crop. Pastures are excellent. About half of the clover has been cut.

Westchester county: Frequent showers delayed haying; crop light. Rye cutting began seventh; good crop. Corn and potatoes look finely. Currants, large crop and fine. Aphides still very injurious to apple and cherry trees. Few apples, excepting Greenings. Rainfall at Bedford, 0.84 inch.

Wyoming county: In some parts haying is almost over; quality good, and yield, though not large, better than expected. Grapes look well. Wheat nearly ready to cut. Rainfall at Castile, 1.26 inches; Varysburgh, 1.02 inches.

Yates county: Favorable week for all crops. Haying about finished. Corn growing rapidly. Winter wheat and spring grains looking very well. Rainfall at Penn Yan, 0.44 inch.

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#### GENERAL REMARKS.

The week has been characterized generally by warm days, cool nights, average sunshine and frequent showers. The rains were unequally distributed but were generally sufficient, and

all growing crops have made a good advance. The weather has generally been somewhat unfavorable for haying, which has made slow progress. The high winds and heavy rain which accompanied the severe storm of the eighth did considerable damage in parts of central counties. Much hay was caught; oats, corn and potatoes were beaten flat and fruit knocked off, but settled weather will probably recover much of the damage. In Hamilton county hops and corn particularly were damaged by hail.

All grain is coming on nicely, with few exceptions. In some parts of Dutchess and Clinton counties oats are reported light, but in general it is very well headed and good straw. Rye harvesting has begun in the more advanced counties.

Corn is still late in most sections, especially on the higher lands of eastern and central counties, where the nights have been particularly cool. Nevertheless the growth is now vigorous, and prospects fine. A large acreage of buckwheat was sown. In the bean-growing sections of Livingston county and vicinity more rain is needed, as some sprouts have not yet come up. Reports on hay are somewhat conflicting. The crop is light in very few sections. Generally it is above the average and of good quality. Pastures continue excellent. Small fruits and berries are fine; grapes are setting well. Apples will be light in many localities. In Westchester county there will be none but Greenings. Special reports from correspondents in regard to the depredations of the hop louse show less cause for alarm than was previously apprehended. As stated in former bulletins the yards in southern Dutchess county are entirely ruined. The vines are completely stripped, save here and there a blackened and perforated leaf, or a new shoot. Nothing was done to stop the ravages of the insect, so quickly did it do its work that it was almost done before discovered. Reports from Madison county state that the vine is in a vigorous condition and lice not so numerous as a short while ago. Under favorable conditions of weather there is no cause for alarm. In Otsego county conditions are about the same. Some lice, but not numerous. Many old yards were badly winter-killed, and are consequently

light. Others are very good. The general expectation is for a somewhat lighter crop than last year on the same acreage. In Franklin county the acreage was greatly increased last year, but winter-killing reduced it to about average. The yards are generally looking very well. In some yards lice are numerous; in others scarce. Under weather conditions favorable for their development lice are present in sufficient numbers to ruin the entire crop. Thus far no damage has been done.

Extracts from the national bulletin for the week ending with Monday, July 3, 1893:

New England: Haying has commenced, and the prospects are favorable for an average crop, except in some northern sections, where drought still continues; fruit outlook favorable.

New Jersey: Encouraging reports received from northern and central sections, where condition of all crops is much improved; harvesting of winter grain, in all sections, progressing favorably.

Pennsylvania: Corn has good color but fields very uneven; hay crop generally light; wheat harvest commenced; crop average; oats light; rye fair; fruit still falling and outlook poor; rain is needed in some sections.

Maryland: Wheat harvesting about over, large yield expected; corn and oats look well; peach crop heavy and being marketed.

Indiana: Wheat, clover and hay harvest ended in some sections, in others not yet begun; wheat crop good in both quality and quantity.

Ohio: Wheat, clover, rye and barley harvest in progress; corn and tobacco growing rapidly; potatoes doing well; oats headed well; timothy improving.

Michigan: Haying general and yield heavy; army worm cutting corn in some counties; fruit prospects continue good; potatoes and garden produce doing well.

E. A. FUERTES,

*Director.*

R. M. HARDINGE,

*Observer U. S. Weather Bureau, Assistant Director.*

PLEASE GIVE THIS THE WIDEST CIRCULATION POSSIBLE.

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## SECTION VI.

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Description of the Stations of the New York  
Weather Bureau.

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## Descriptions of Stations.

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The following descriptions have been revised and brought up to date mainly by correspondence with observers. Omissions will, however, be found in the cases of a few stations recently established, or whose instrumental equipment and exposure have been materially changed.

### WESTERN PLATEAU — ALLEGANY COUNTY.

STATION, ALFRED CENTER — IN CHARGE OF PROFESSOR F. S. PLACE  
AT ALFRED UNIVERSITY.

Date of establishment not known; latitude,  $42^{\circ} 15'$  north; longitude,  $77^{\circ} 55'$  west; elevation 1,894 feet.

The town of Alfred Center is situated near the upper limit of a valley which opens, in a northeasterly direction, towards the Alfred station of the New York, Lake Erie and Western railroad, 2 miles distant. The station is located in the town, half-way up the eastern slope of the valley, on both sides of which the hills rise to the heights of from 100 to 200 feet.

A standard Green barometer is hung in a room (heated in winter), on the first floor of a house on Sayles street. The maximum, minimum, wet and dry thermometers, with a Draper thermograph, are located in a louvred shelter of the pattern of the United States Weather Bureau standard. The shelter is 7 feet above the ground, and 35 feet from any buildings.

The rain-gauge is 28 inches above the ground, and 30 feet from buildings.

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### WESTERN PLATEAU — CATTARAUGUS COUNTY.

STATION, HUMPHREY — MR. CHARLES E. WHITNEY, OBSERVER.

Equipped (by signal service) 1885-1886; latitude,  $42^{\circ} 12'$  north; longitude,  $78^{\circ} 34'$  west; elevation 1,950 feet, as determined by aneroid readings by the writer; no data have been previously obtainable, and consequently the height given in the report of 1889 is very much in error.

The station is about 10 miles northeast of the Great Valley station of the New York, Lake Erie and Western railroad. It is near the summit of a ridge of hills, 350 feet above, and on the



northwest side of a stream which flows into the Alleghany river at Great Valley station. The hills in this section rise to an average height of 1,900 or 2,000 feet above tide, and are intersected by numerous deep valleys.

Mr. Whitney's station is situated between two knolls, toward the east and west respectively, whose summits are from 50 to 80 feet above the station.

The dry and wet bulb and the maximum and minimum thermometers are placed under the roof of a piazza facing toward the south, in an angle formed by the main portion of the house and a wing on the eastern side. The height of the thermometers above the ground is about 7 feet; above the floor of the piazza, 5 1-2 feet, and below its roof, 3 feet. The width of the piazza is 4 feet. The thermometers are hung several inches away from the wall of the building.

The rain-gauge is situated about 45 feet north-northwest of the main portion of the house. Two or three dwarf fruit trees are at a distance of 12 or 15 feet, and are the only obstacles to a free circulation of air in the vicinity. The top of the gauge is 4 feet above the ground.

An anemometer placed at this station is mounted on the south gable of the house, 7 feet above the ridge and about 30 feet above the ground.

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#### WESTERN PLATEAU — CHAUTAUQUA COUNTY.

STATION, ARKWRIGHT — MISS ETTA L. WILCOX, OBSERVER.

Established in August, 1890; special temperature station; latitude 42° 28' north; longitude 78° 15' west; elevation 1,200 feet.

This station is situated about 6 miles east-southeast of Dunkirk, on the range of hills which borders the shore of Lake Erie. The writer's observations of an aneroid barometer give the elevation of this station as approximately 685 feet above the level of Lake Erie. The thermograph is located at the house of Mr. E. I. Wilcox, which stands on the northern slope of a ridge rising above the general level of the hills to a height of 200 or 300 feet, half a mile in the rear of the station. The

ground falls away from Mr. Wilcox's house toward the north and west; so that there is an unobstructed view toward the Buffalo plains and over Lake Erie. The station is somewhat sheltered from south winds by the ridge mentioned, but air currents from all other directions have a free circulation about it. The shelter of the Draper thermograph is placed at the eastern end of a northern piazza, at a height of 41-2 feet above the floor and 7 feet from the ground. The eastern and western ends of the piazza are formed by wings projecting about 7 feet from the body of the house. The thermograph being placed about 1 foot distant from the outer side of the piazza. The rays of the sun are excluded from the shelter and its vicinity at all times, excepting possibly for an hour in the late afternoons of summer.

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#### WESTERN PLATEAU—CHEMUNG COUNTY.

STATION, ELMIRA—MESSRS. W. S. & C. R. GERITY, OBSERVERS.

Established November, 1888; latitude,  $42^{\circ} 06'$  north; longitude,  $76^{\circ} 56'$  west; elevation 868 feet.

The city of Elmira is located upon the broad valley bottom of the Chemung river, at its point of intersection with a deep depression extending northward from Pennsylvania to the valley of Seneca lake. Beyond the city limits the hills rise abruptly from the flat lands to the higher levels of the western plateau.

The meteorological station is located near the center of the city at the business-house of Messrs. Gerity, on the southeast corner of Lake and Carrol streets. The thermometer shelter projects from a window on the north-northwest side, and second story of the brick building. Its dimensions are approximately 3 feet in width, 2 feet in depth, and 3 feet in height, the thermometers being secured near its center, at a distance of 18 inches from the window (which is always closed). The sides and front of the shelter are closed, the provision for ventilation consisting of an open bottom and air spaces between the top and sides.

The thermometers are 18 feet above the pavement. The building shades the shelter and the pavement beneath until the afternoon observation has been made, but during the remainder of the day the surroundings of the instruments may become heated by the sun.

The rain-gauge is exposed upon the roof of the building, at a distance of 18 feet from the nearest side wall. Its elevation above the ground is 471.2 feet.

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### WESTERN PLATEAU — LIVINGSTON COUNTY.

STATION, MOUNT MORRIS — MR. J. E. WHITE, OBSERVER.

Established June, 1890; latitude, 42° 42' north; longitude, 77° 56' west; elevation, 535 feet.

The instruments are located at the house of Mr. White, 1 mile south of Mount Morris, on the western side of the broad valley of Dansville creek. The ground falls 20 or 30 feet to the valley bottom, in front of the house, and in its rear rises gradually to the ridge which separates Dansville creek from the Genesee river. The general surface of the neighboring country slopes rapidly from the high hills, further south, toward the plains of the great lake region.

Since the inspection of the station by an officer of the Bureau in 1890, the location of the instruments has been changed from the piazza to the northern side of the house. The thermometers are now secured to a board facing a window of the first story; their elevation above the ground being 10 feet.

The rain-gauge is about 100 feet southwest of the house; its top being twelve inches above the ground.

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### WESTERN PLATEAU — NIAGARA COUNTY.

STATION, LOCKPORT — MR. W. D. LOVELL, OBSERVER.

Removed from Pendleton Center in April 1891; latitude, 43° 10' north; longitude, 78° 43' west; elevation, 616 feet.

This station is three-fourths mile from the limits of the city of Lockport. The surface of the country near the station is level, but about 40 or 50 rods north is the "mountain," so called, descending about 100 feet toward the north.

The dry, wet, maximum and minimum thermometers are exposed in a shelter whose base is about 4 feet from the ground and about 30 feet from the house and barn, respectively. The shelter is about 2 feet square, and has a pyramidal roof. The door and three remaining sides are of louvred work, and the bottom is formed by slats placed about 1 inch apart. The door opens toward the north.

The rain-gauge is in an open space in the garden about 10 feet from any trees or bushes.

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### WESTERN PLATEAU — SCHUYLER COUNTY.

STATION, WEDGEWOOD — MR. O. F. CORWIN, OBSERVER.

Equipped with standard instruments in December, 1889; latitude, 42° 25' north; longitude, 76° 56' west; elevation, 1,350 feet.

This station is situated on the high hills which rise abruptly from the valley of Seneca lake, and is about three-quarters of a mile west of Wedgewood depot of the Fall Brook Coal Company's railroad. The ground rises gradually to the west and south of Mr. Corwin's house, where the instruments are located, but slopes away from it in all other direction. The temperature and rainfall at this station should fairly represent the climatic features of the highlands near the central lakes.

The thermometer shelter is 30 feet west of the house, and is supported on posts at a height of 4 feet above the sod. Its dimensions are about 3 1-2 by 2 1-2 feet at the base and 3 feet in height. The sides are of board (unpainted), with a door of the width of the shelter on the east side. Ventilation is obtained by spaces about one-eighth of an inch in width between the boards, and by a large number of holes bored in the sides at such an angle that rain is excluded. The top is double, with an air space, and has a slight slope. The thermometers are hung near the center of the shelter. The rain-gauge is placed on a post 4 1-2 feet above the ground, that it may be above snow-drifts. The only obstacles to a free circulation of air in the vicinity of the gauge is a hedge of shrubs 20 feet distant and about 12 feet in height.

## WESTERN PLATEAU—STEUBEN COUNTY.

STATION, SOUTH CANISTEO—MR. JAMES E. WILSON, OBSERVER.

Equipped November, 1889; latitude,  $42^{\circ} 12'$  north; longitude,  $77^{\circ} 34'$  west; elevation, 1,480 feet.

This station is situated in the valley of a creek, 5 miles south-southeast of the town of Canisteo. The hills rise abruptly from the valley at distances ranging from 100 to 200 feet on the eastern and western sides of the station. The high ridges of the surrounding country are separated by deep valleys similar to the one in which the station is located, opening northward toward the Canisteo river. The highest point in the neighborhood is the "Swale," about 3 miles east of the station.

The dry and wet and the maximum and minimum thermometers are exposed under a piazza of Mr. Wilson's house, 5 feet in width and facing the northeast. The thermometers are secured to the wooden wall of the house, about 3 feet from its northeast corner. An air space intervenes between the thermometer supports and the wall of the heated rooms within. Canvas is spread along the front of the piazza to exclude the rays of the morning sun from the instruments and also from the piazza floor. The thermometers are 3 feet below the piazza roof, 5 1-2 feet above its floor and 8 feet above the ground.

The rain-gauge is 20 feet distant from the nearest building, 10 or 12 feet in height, and about equally as far from a few small fruit trees. The height of the top of the gauge above the ground is 2 feet.

## WESTERN PLATEAU—WYOMING COUNTY.

STATION, ARCADE—MR. J. D. TATE, OBSERVER.

Established April, 1890; latitude,  $42^{\circ} 32'$  north; longitude,  $78^{\circ} 26'$  west; elevation, 1,660 feet.

This station is located near the eastern side of a ridge of hills which lie west of a valley extending from Arcade to Sandusky. The valley of Arcade is about 2 miles west-northwest of the station. Towards the north, the ground slopes gently from the station to the valley bottom, 100 feet or more below; while towards the west and southwest, the ridge rises to a height of 100 to 200 feet above the station. The surrounding country is very

hilly, some of the higher summits reaching an elevation of more than 2,000 feet above tide.

The dry and wet bulb, maximum and minimum thermometers are exposed out of the north window of an unheated one-story wing of Mr. Tate's house. The sides of the shelter are the window blinds, which are secured in a position at right angles to the wall of the house by a wide board forming the top of the shelter. The thermometers are 9 feet above the ground, and facing outward, are reached by steps. The front of the shelter is open, while a wide board at the bottom cuts off radiation from the ground.

The rain-gauge is about 40 feet northwest of the house. There are no trees or other obstructions to a free air circulation in its vicinity. The top of the gauge is 26 inches above the ground.

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#### WESTERN PLATEAU—WYOMING COUNTY.

STATION, VARYSBURGH—MR. H. C. ORR, OBSERVER.

Equipped with maximum and minimum thermometers in February, 1893; latitude,  $42^{\circ} 45'$  longitude,  $78^{\circ} 20'$ ; elevation not known.

The town of Varysburgh is situated in the Tonawanda valley, which extends nearly north and south through western Wyoming county. The station is located within the limits of the village.

The thermometer shelter is built substantially after the specifications of the United States Weather Bureau, having louvred sides and a sloping shingled roof. It is 24 feet southeast of the nearest building (a barn) and is not affected by any artificial heat. The thermometers are 5 1-2 feet above the ground.

The rain-gauge stands on level ground, 30 feet south of Mr. Orr's house and 12 feet south of a small fruit tree. The top of the gauge is 2 feet above the ground.

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#### EASTERN PLATEAU—BROOME COUNTY.

STATION, BINGHAMTON—SUPERINTENDENT OF STATE HOSPITAL; MR. J. J. EASTMAN, OBSERVER.

Established (by signal service) October, 1889; latitude,  $42^{\circ} 07'$  north; longitude,  $75^{\circ} 55'$  west; elevation, 870 feet.

The instruments are located on the grounds of the pumping station of the State hospital water-works, on the northern bank

of the Susquehanna river. North of the station the ground rises abruptly to the hospital grounds, over 200 feet above, and beyond the hospital the ground continues to rise to a much greater elevation. The station is at the outskirts of the city of Binghamton, which lies on the broad plain toward the south and west.

The dry-bulb and maximum and minimum thermometers are exposed in a louvred shelter, built after the signal service specifications, which is supported at the height of 12 feet from the ground on a skeleton platform. It is 100 feet west of the pumping station, 100 feet north of the river bank, and about 30 feet above mean water level of the river.

The rain-gauge is 90 feet west of the water-works, and there are no obstructions nearer than this to interfere with a free air circulation. The top of the gauge is 36 inches above the ground.

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#### EASTERN PLATEAU — DELAWARE COUNTY.

##### STATION, SOUTH KORTRIGHT — MR. D. C. SHARPE, OBSERVER.

Established (by Signal Service) in 1888; equipped by State Service, February, 1890; latitude, 42° 20' north; longitude, 74° 48' west; elevation, 1,700 feet.

This station is located in a deep valley of the Catskill mountains through which the western branch of the Delaware river flows in a southwesterly direction. On the southern side of the valley the mountains rise to a height of about 1,000 feet, and to a somewhat less elevation on the northern side. The valley at this point is about one-half mile wide, the station being located near its center.

The maximum and minimum thermometers are exposed in a doorway about 2 feet deep, on the north-northwest side of Mr. Sharpe's house. The instruments face towards the northeast, and are never reached by the direct sunlight. The hall into which the door leads is unheated. The walls of the building are of wood. The thermometers are about 7 feet above the sod.

The rain-gauge is 22 feet distant from the south side of the house. The top of the gauge is 2 feet above the ground.

## EASTERN PLATEAU — MADISON COUNTY.

STATION, BROOKFIELD — MR. D. B. STILLMAN, OBSERVER.

Established in December, 1889; latitude,  $42^{\circ} 48'$  north; longitude,  $75^{\circ} 20'$  west; elevation, 1,850 feet.

The town of Brookfield is situated in the deep valley of Beaver creek, a small stream flowing southward into the Unadilla river. The hills rise abruptly on the eastern and western sides of the town to heights ranging from 200 to 800 feet.

The meteorological station is located at Mr. Stillman's house which stands a few hundred feet east of the creek, the ground in its vicinity rising gradually toward the eastern hills.

The dry and wet bulb, and the maximum and minimum thermometers are supported by a horizontal board facing the north window of an unheated hallway in the second floor of the building. The roof of the house projects over the thermometers, affording a partial shelter from rain. The walls of the building, with the high eastern hills, shade the instruments until late in the afternoons of summer, when they are exposed to the rays of the sun for about an hour. The thermometers are about 12 feet above the ground and 1 foot distant from the window.

The rain-gauge is located about 40 feet from the western side of the house, its top being 2 feet above the ground.

## EASTERN PLATEAU — ORANGE COUNTY.

STATION, MIDDLETOWN — IN CHARGE OF SELDEN H. TALCOTT, M. D.,  
DR. ALLEN AND MR. EWER, OBSERVERS. AT THE STATE HOSPITAL.

Established January, 1890; latitude,  $41^{\circ} 25'$  north; longitude,  $74^{\circ} 25'$  west; elevation, 611.5 feet.

The State hospital is located about one mile southwest of Middletown, and is about 50 feet above the city. The ground slopes rapidly away from the station toward the north and east, but southward the country is nearly level with the station, or rises slightly above it.

The dry and wet, maximum and minimum thermometers are exposed on the northern side of a wing of the hospital, one and one-half stories in height. The instruments are secured to a frame-work facing the window, 18 inches distant from it, and 10



feet above the ground. The thermometers are about 4 feet below the roof, which, extending 4 feet beyond the wall is utilized as a shelter. The rays of the sun are entirely excluded from the instruments and the sod beneath, in the morning by the high wall of the Main Building, which extends for 170 feet or more toward the north, and in the afternoon by a northern extension of the wing. The window is only opened for the purpose of moistening the wet bulb thermometer. The room within is unheated but the corridor in the basement beneath is warmed by steam during the winter. The thermometers are about 40 feet distant from the Main Building.

The rain-gauge is exposed on a lawn east of the Main Building and about 200 feet from it. There are no obstructions to a free air circulation in the vicinity of the gauge, other than a few ornamental shrubs 30 or 40 feet distant.

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### EASTERN PLATEAU — ORANGE COUNTY.

STATION, PORT JERVIS — PROFESSOR JOHN M. DOLPH, OBSERVER.

Established November, 1889; special temperature station; equipped with a thermograph in December, 1890; latitude,  $41^{\circ} 21'$  north; longitude,  $74^{\circ} 40'$  west; elevation, 470 feet.

Port Jervis is situated between the Delaware and Neversink rivers, at a short distance north of their points of junction. The valley of the Delaware makes an abrupt turn at this point, from the southeast to the southwest, the Neversink river entering from the northeast at the bend. The surface rises gradually toward the north in the vicinity of the station, which is about 50 feet above the river surface. But beyond the city limits high hills close in abruptly about the valley.

The thermometers and thermograph are exposed in a louvred shelter built substantially after the pattern employed by the United States Weather Bureau. The shelter is about 12 feet from the northeastern side of the house, and 5 feet above the ground.

The rain-gauge is placed upon a post at a height of 4 feet 8 inches above the ground, between two low buildings whose roofs rise above the gauge to a height about equal to their distance from it.

## EASTERN PLATEAU—OTSEGO COUNTY.

STATION, COOPERSTOWN — MR. G. POMEROY KEESE, OBSERVER.

Established 1884; latitude, 42° 41' north; longitude, 74° 57' west; elevation, 1,300 feet.

Cooperstown is situated in the valley at the southern end or foot of Otsego lake, hills rising abruptly on the eastern and western sides of the town. The stream flowing south from the lake through a narrow valley, forms one of the principal sources of the Susquehanna river. The meteorological station is 200 feet southwest from the shore of the lake, and is sufficiently isolated from the buildings of the town to admit of a very free air circulation. The hills on the eastern and western sides of the valley are respectively one-half and three-fourths of a mile from the station.

The dry, wet, maximum and minimum thermometers are secured to the side posts of a northern piazza of Mr. Keese's residence; their distance from the ground being about 9 feet, and from the piazza roof, 5 feet. The sun reaches the piazza only near the hours of rising and setting, and at these times one-half of the piazza is always in the shade of a projecting doorway; hence by moving the thermometers from one side of the piazza to the other, they are kept shaded for several hours preceding the time of observation. The walls of the house are of brick, from which the instruments are separated by at least several inches of air space.

The rain-gauge is 60 feet south of the house, and has no obstacles to a free air circulation in its vicinity. The top of the gauge is 4 feet above the ground.

Mr. Keese's record of temperature was kept during 36 years from readings of a Green standard thermometer, with which the instrument furnished by this service early in 1890 was found to agree closely. The rain-gauge in use for 36 years was the Pike "conical" form, which, as compared with the gauge of the New York bureau, is found to give a slightly deficient registration. The exposure of the instruments has been substantially the same during the entire period of the record.

## EASTERN PLATEAU — SCHUYLER COUNTY.

STATION, PERRY CITY — MR. W. H. JEFFERS, OBSERVER.

Equipped with standard instruments in December, 1889; latitude,  $42^{\circ} 08'$  north; longitude,  $76^{\circ} 41'$  west; elevation, 1,038 feet.

This station is located about 4 miles west-southwest of Trumansburgh, on the hills west of Cayuga lake, from whose shore it is about 6 miles distant. Mr. Jeffers' house is situated on the west bank of a brook which, after flowing southward 50 rods, meets a larger stream emptying into Cayuga lake; the ground rising gradually from the valley of the creek toward the north-west and south. At a distance of 8 miles to the south is the range of Newfield hills, whose summit reaches an altitude of 2,100 feet; and a similar high tract of land lies to the west of the station near Seneca lake. The valley in which the station is situated, with others opening out of it, form an irregular depression extending through this western range of hills.

The maximum, minimum, wet and dry bulb thermometers are exposed in a shelter built on the north side of a low wing of Mr. Jeffers' house. The bottom of the shelter, which is about 4 1-2 feet above the ground is constructed of slat work, which cuts off radiation from the sod. The sides are louvred in the manner adopted by the signal service, and a slanting roof and a door opening toward the north are provided.

The rain-gauge is about 80 feet east of the house and about 30 feet south of a corn-house. The gauge is 2 feet and 9 inches above the ground.

## EASTERN PLATEAU — TIOGA COUNTY.

STATION, WAVERLY — MR. T. P. YATES, OBSERVER.

Established (by Signal Service) in August, 1887; latitude,  $42^{\circ} 41'$  north; longitude,  $76^{\circ} 34'$  west; elevation, 825 feet.

This station is near the northeastern limits of the village of Waverly, and its surroundings are more like an open country than might be expected from its proximity to the village. The station is about two-thirds of the distance between the gradual slope from the Susquehanna river and the hills a mile away,

which form the northern boundary of the valley. The elevation of the hills in this vicinity, on either the north or south side of the valley, probably does not exceed 300 to 500 feet.

The dry and wet bulb and the maximum and minimum thermometers are exposed in a shelter 50 feet east of Mr. Yates' house. The shelter consists of a double unpainted box open at the bottom having an air space 1 inch in width between the sides, and with slat work at the top opening to the ventilators in the ridged roof. Some additional ventilation is also obtained through a few spaces from one-eighth to one-fourth of an inch in width, between the boards at the sides of the shelter. The dimensions of the shelter (outside) are 2 x 3 feet at the base and 2 1-2 feet in height, exclusive of the roof. The thermometer supports are secured to a board near the back or south side of the inner box, and the door of the shelter opens towards the north. The height of the thermometers above the sod is 4 1-2 feet.

The rain-guage is 5 feet north of the shelter, 45 feet from the house (which has two stories and an attic), and about 35 feet from the branches of a large fruit tree.

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#### NORTHERN PLATEAU — CLINTON COUNTY.

STATION, LYON MOUNTAIN — MR. PHILIP J. MULLIN, WITH THE CHATEAUGAY ORE AND IRON CO., OBSERVER.

Established May, 1889; special temperature station; latitude, 44° 41' north; longitude, 73° 57' west; elevation, 1,917 feet.

This station is located at the mining town of Lyon Mountain, in the northern Adirondack region, probably the highest settlement of the northern plateau. The thermograph is located at the offices of the mining and railroad companies, on the line of the Chateaugay railroad. Immediately to the south of the station the ground rises to the summits of Lyon mountain, and of an adjacent peak, while toward the north the surface falls away to the valley bottom, from 70 to 100 feet below the station. The valley is bordered on the northern side by hill ridges of a lesser height than those toward the south, which are cut by numerous depressions, the most important of which form broad valleys

extending to the open country towards the northwest and northeast respectively. Owing to the exposed position of this station, and the activity of the air circulation about it, the effect of local conditions must be small, so that the thermograph charts may be considered to give in detail the general temperature conditions of the northern Adirondack region.

The shelter of the thermograph is secured to the siding of the mining office, facing to the north-northwest. A roof 12 feet in width extends over it, and with the walls of the main building entirely excludes the rays of the sun, while admitting of free air circulation. The instrument is also isolated from heated portions of the building. The height of the thermograph above the ground is 9 feet.

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#### NORTHERN PLATEAU — FULTON COUNTY.

STATION, GLOVERSVILLE — MR. L. W. CHAMBERLIN, OBSERVER.

Established December, 1888; latitude, 43° 5' north; longitude, 74° 30' west; elevation, 802 feet.

This station is located in the city of Gloversville, on the southern slope of the Adirondack plateau, and 592 feet above the Mohawk valley bottom. The maximum, minimum, dry and wet bulb thermometers are exposed in a shelter constructed by Mr. Chamberlin after the signal service specifications, and should, therefore, give reliable results. This shelter is 5 feet above the sod. The rain-gauge is exposed near the shelter.

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#### NORTHERN PLATEAU — LEWIS COUNTY.

STATION, CONSTABLEVILLE — MR. CHARLES E. TAYLOR, OBSERVER.

Established by the National Service in November, 1888; fully equipped by the State Service in December, 1889; latitude, 43° 32' north; longitude, 75° 27' west; elevation, 1,246 feet.

The village of Constableville lies on the eastern side of the "Tug Hill" range, which extends from north to south through the western part of Lewis county, as a continuous ridge, having an average elevation of about 2,000 feet above tide. On the eastern side of this range there is a series of plateaux, in steps, rising successively from the valley bottom. Constableville and

Turin also are situated on the broadest one of these terraces or steps, at a height of 400 feet above the Black river, which flows northward through the valley, at the eastern base of the ridge. From the western side of the village the ground again rises towards the ridges of the hills, but the generally regular contour of the range is broken at Constableville by a local depression, extending westward among the higher hills. This station is on a slight rise of ground at the eastern limit of the village.

The dry and wet bulb and maximum and minimum thermometers are exposed in a single-louvred shelter, whose form and dimensions conform to those adopted by the United States Signal Service. It is supported at a height of 3 1-2 feet above the sod. The rain-gauge is of the Weather Bureau pattern. Its top is 2 inches above the ground.

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### NORTHERN PLATEAU — LEWIS COUNTY.

#### STATION, NUMBER FOUR — MR. CHARLES FENTON, OBSERVER.

Established by the National Service December, 1889; equipment completed by the State in December, 1889; latitude, 43° 50' north; longitude, 75° 12' west; elevation, 1,571 feet.

The station, Fenton's Number Four, is 18 miles east of Lowville, near the western limits of the Adirondack wilderness. The station stands on a plateau which commands a view of Beaver lake, about one-half mile distant, and also a considerable range of the surrounding country in all directions. Since the hills in this section are much lower than the peaks of the eastern Adirondacks, the air circulation about the station is nearly unobstructed.

The dry, wet bulb and maximum and minimum thermometers are exposed near the northwest corner of Mr. Fenton's main building in a single-louvred shelter of the Signal Service pattern. The shelter is about 11 feet above the ground, and is reached by a narrow platform extending out about 10 feet from the piazza of the house. It is exposed to the rays of the sun until about 9 in the morning; but during the remainder of the day the shelter is shaded by the main building. The rain-gauge is

situated on open ground, free from obstacles to a favorable exposure. The height of the funnel is about 3 feet from the ground. The barometer (by Schneider Bros.) is hung near the window of an unheated room on the first floor of the building.

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### NORTHERN PLATEAU — LEWIS COUNTY.

STATION, TURIN — MR. R. T. CHURCH, OBSERVER.

Established by the State Service in October, 1890; latitude,  $43^{\circ} 38'$  north; longitude,  $75^{\circ} 25'$  west; elevation, 1,240 feet.

This station is located in the same terrace of the "Tug Hill" range already described with reference to Constableville; but the plateau is not so wide as at the latter place, and the hills rise much more abruptly westward from Turin toward Gomer Hill (the highest point of the range) whose summit is 2,100 feet above tide. A consideration of the very heavy rains or cloud bursts which have occurred during the past years in this section as well as its exceedingly severe winter climate and deep snows, indicate the existence of peculiar meteorological conditions well worthy of further investigations.

This station is situated about one-fourth of a mile west of the village of Turin, and is but a few hundred feet from the base of the steep hills of the range.

The dry and wet bulb thermometers and the maximum and minimum, are exposed out of a north window on the first floor of Mr. Church's house. The afternoon sun is excluded by wings from the eastern and western sides of the window; and over these a slanting board cover is placed, forming a shelter from rain and snow. The windows are always closed and the rooms are unheated. The sod immediately beneath the instruments is protected at all hours by the house and a fir tree at its northwestern corner. The dwelling is a frame house. The rain-gauge is located in an open field 100 feet distant from the house. The height of the mouth of the gauge is 5 feet above ground.

## NORTHERN PLATEAU — FRANKLIN COUNTY.

STATION, SARANAC LAKE — EDWIN R. BALDWIN, M. D., OBSERVER.  
Established November, 1893; latitude,  $44^{\circ} 19'$  north; longitude,  $74^{\circ} 08'$  west; elevation,      feet.

This station is situated in the village of Saranac Lake, one-eighth mile from the Saranac river, and 75 to 100 feet above its surface; the ground about the station being very nearly level. A hill rises about 100 feet above the station toward the north-east, and at a considerable distance north and northeastward is a range of the Adirondack mountains.

Dry and wet bulb, maximum and minimum thermometers are secured 4 inches from the clapboarding of Mr. Baldwin's residence, facing north 10 degrees east. They are protected from the weather by a slanting board 14 inches wide. Their height above the ground is 5 feet. The instruments are not reached by the rays of the sun during the winter, and only late in the afternoon in summer, when a screen will become necessary.

The rain-gauge has an excellent exposure 100 feet distant from any trees or buildings. Its top is 2 feet 6 inches above the ground.

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## COAST REGION — SUFFOLK COUNTY.

STATION, BRENTWOOD — W. H. ROSS, M. D., OBSERVER.  
Established February, 1891; latitude,  $40^{\circ} 45'$  north; longitude,  $73^{\circ} 14'$  west; elevation, 75 feet.

This station is located in the village of Brentwood at a distance of one-fourth mile from the Hotel Austral.

The maximum and minimum, dry and wet bulb thermometers are exposed on the north side of Dr. Ross' residence, about 6 feet above the floor of a veranda, whose roof acts as a shield from the sun and weather. Their height above the ground is 7 feet. The rain-gauge has a favorable exposure upon an open plat of ground.

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## COAST REGION — SUFFOLK COUNTY.

STATION, SETAUKET — MR. SELAH B. STRONG, OBSERVER.  
Equipped with State instruments in January, 1890; latitude,  $40^{\circ} 57'$  north; longitude,  $73^{\circ} 05'$  west; elevation, forty feet.

This station is situated one mile northeast of Setauket post-office upon a neck of land projecting into estuaries of Long



Island sound. The Oldfield light, a prominent point of the northern coast of Long Island, is about 1 mile distant toward the northwest.

Mr. Strong's house stands on ground 40 feet above sea-level, with an open exposure on all sides excepting the northeast, where a cedar grove stands on a slight elevation.

The instrument shelter, containing a full equipment of thermometers, is fastened to a window casing on the north side of the house. It is louvred on three sides, with slat work at the bottom; the side facing the window being open. The dimensions of shelter are: Width, 20 inches; height, 24 inches; depth, 10 inches. Its height above ground is 6 feet, and the distance from the window 4 inches.

The roof of an open piazza prevents the rays of the afternoon sun from reaching the shelter, while a grove toward the east has a similar effect in the morning.

The rain-gauge stands upon nearly level ground, and is well removed from obstructions to a free air circulation. Its height above ground is 12 inches.

Observations upon temperature and rainfall have been made continuously at this station since 1885, Signal Service instruments being used until 1890.

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### HUDSON VALLEY—COLUMBIA COUNTY.

STATION, LEBANON SPRINGS—MR. ARTHUR K. HARRISON, OBSERVER.

Established in March, 1892; latitude,  $42^{\circ} 29'$  north; longitude,  $73^{\circ} 20'$  west; elevation, 930 feet.

This station is located on the eastern side of a narrow valley which runs nearly north and south through the high hills of eastern Columbia county.

The maximum and minimum thermometers are exposed on the northern side of a building under a "hood;" their distance from the walls of the building being 5 or 6 inches, and from the ground 5 feet.

The rain-gauge is exposed in a slightly sloping, open meadow. Its height above ground is 1 foot 4 inches.

## HUDSON VALLEY — DUTCHESS COUNTY.

STATION, WAPPINGERS FALLS — MR. H. C. TOWNSEND, OBSERVER.

Equipped with rain-gauge May, 1890, with maximum and minimum thermometers in February, 1893; latitude,  $44^{\circ} 35'$  north; longitude, west  $73^{\circ} 56'$ .

This station is located at the eastern edge of the town of Wappingers Falls, in the valley of Wappingers creek. The surrounding country is broken, one of the higher hills rising about 300 feet west of the station. The station stands on a point of land extending into Wappingers lake, a body of water 1 mile long and about half a mile wide.

The maximum and minimum thermometers are exposed on the northwestern side of a small wing of Mr. Townsend's house, and in a shallow angle formed by the wing and the main portion of the house. They are protected by a shelter 3 feet high, 3 feet wide and 1 foot deep; its top and back being of solid wood, and the front and sides of lattice work. During the summer the sun reaches the shelter for about an hour in the morning and afternoon, but at other seasons it is entirely shaded. The thermometers are 5 feet 2 inches above the ground and 8 inches from the wing wall. The room within is not heated.

The rain-gauge is at ample distance from trees and buildings. Its top is 7 feet 4 inches above the ground.

## HUDSON VALLEY — DUTCHESS COUNTY.

STATION, HONEYMEAD BROOK — DR. JAMES HYATT, OBSERVER.

Equipped April, 1890; latitude,  $41^{\circ} 51'$  north; longitude,  $73^{\circ} 42'$  west; elevation, 450 feet.

This station is situated about 1 mile southeast of the village of Stanfordville, and is about 100 feet distant from the track of the N. D. and C. R. R. The valley through which this road passes opens toward the south-southwest into the Hudson valley; hence it is thought that the meteorological conditions of the station are similar to those of the Hudson valley north of the Highlands. The general surface rises for several miles east

and southeast from the station to the high hills west of the Harlem valley; while in its immediate vicinity the ground is broken by numerous irregular hills having a comparatively small elevation.

The dry and wet bulb and the maximum and minimum thermometers are placed at the angle formed by the northeast side of the main portion of Mr. Hyatt's house, and the northwest side of a wing projecting about 4 feet from the main building; the instruments thus fronting toward the north. The thermometers (excepting the maximum) are placed between louvred sides, the top, front and back of the shelter being open. The maximum thermometer is placed near by, outside of the shelter. The wings of the house exclude the sun at all hours.

The rain-gauge, which was constructed by Mr. Hyatt, is 70 feet southeast of the house. Its top is 41.2 feet above the ground. Its reading agree well with the gauge of the State service.

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### HUDSON VALLEY—DUTCHESS COUNTY.

STATION, POUGHKEEPSIE, VASSAR COLLEGE OBSERVATORY.

Latitude,  $41^{\circ} 41'$  north; longitude,  $73^{\circ} 53'$  west; elevation, 180 feet.

This station is located on a plateau 180 feet above the Hudson river and about 2 miles from its eastern bank. The country is quite open in all directions.

The anemometer at this station is mounted on the observatory, 71.2 feet above a flat roof and 27 feet above the ground.

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### HUDSON VALLEY—PUTNAM COUNTY.

STATION, CARMEL—MR. THOMAS MANNING, OBSERVER.

Date of establishment not known; latitude,  $41^{\circ} 25'$  north; longitude,  $73^{\circ} 40'$  west; elevation 500 feet.

This station is about 1,000 feet east of the village of Carmel, near the foot of a gradual descent from the village. The surrounding country is much broken by abrupt, irregular hills, probably not exceeding 300 or 400 feet in height above the general surface.

The station is equipped with a maximum and minimum thermometer, owned by Mr. Manning and a rain-gauge of the pattern used in the Croton aqueduct system. The thermometers are exposed on the northern piazza of Mr. Manning's house, at the height of 5 feet above the floor, and at about the same distance below the roof. The instruments are about 15 feet from the western or nearest end of the piazza, the roof of which (6 feet in width), with the hill westward, probably shields the thermometers from the direct rays of the sun at all hours.

The rain-gauge is on level ground, about 100 feet south of the house, and has an unobstructed air circulation about it. The funnel of the gauge is about 12 inches in diameter, and its height above the ground is 12 inches.

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#### HUDSON VALLEY — SARATOGA COUNTY.

STATION, STILLWATER — REV. R. G. THOMPSON, OBSERVER.

Established May, 1893; latitude,  $42^{\circ} 57'$  north; longitude,  $73^{\circ} 40'$  west.

This station is located in the town of Stillwater, in the Hudson river valley, which at this point is about one mile in width, high hills rising on each side. The river is about 40 rods distant from the station flowing southward.

The maximum and minimum thermometers are exposed on a northern piazza, on the northeastern side of the house in summer, and on the northwestern side in winter. They are 5 feet from the brick wall of a room heated throughout the year; being mounted on a backing of inch board, with screens of the same material at the top and sides. In winter the sun strikes the back and end of the shelter for a short time in the afternoon, but in its summer position the shelter is shielded at all hours by the house and by large elms near by. The thermometers are 71-2 feet above the ground.

The rain-gauge is placed on level ground 25 feet from buildings, and 10 feet from a small fruit tree. The top of the gauge is about 14 inches above the ground.

## HUDSON VALLEY—ULSTER COUNTY.

## STATION, RONDOUT—MR. H. A. STONE, OBSERVER.

Established (by Signal Service) in November, 1888; equipped with a thermograph by State service in November, 1890; latitude,  $41^{\circ} 55'$  north; longitude,  $73^{\circ} 58'$  west; elevation, 150 feet.

This station is located in the open country, about 1 mile north of Rondout. It stands a short distance east of the summit of a ridge extending north and south between the Esopus creek and the Hudson river. The ground rises slightly immediately in the rear, or westward from the station; while eastward, the surface is nearly flat or rolling to the cliffs bordering the Hudson river, about 2 miles distant.

The station is equipped with a Draper thermograph, inclosed in a shelter which is located against the outer wall of an unheated passageway on the northern side of Mr. Stone's house. Its height above the ground is about 5 feet. The shelter is shaded from the sun throughout the day, and is open to a free air circulation.

The rain-gauge is located about 50 feet west of the house, which is 2 stories in height. The top of the gauge is 2 feet above the ground.

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## HUDSON VALLEY—WESTCHESTER COUNTY.

## STATION, PEEKSKILL, AT THE PEEKSKILL MILITARY ACADEMY—IN CHARGE OF PROFESSOR JOHN N. TILDEN, M. D.

Established in November, 1889; latitude,  $41^{\circ} 17' 20''$  north; longitude,  $73^{\circ} 55' 27''$  west; elevation, 250 feet.

The military academy is situated on a knoll which rises at the southeastern side of the town of Peekskill. From the summit the ground slopes abruptly down to the Hudson river, about one-half mile distant from the station and 250 feet below it. The surrounding country is broken by abrupt hills and deep valley, the general surface, however, rising toward the east in the rear of the station.

The equipment of this station consists of a standard barometer, a complete set of thermometers and a rain-gauge, owned by Dr. Tilden.

The dry and wet bulb, maximum and minimum thermometers are exposed in a shelter, built in all respects after the Signal Service specifications. It is located about 150 feet from the main building of the academy, in a position insuring a free circulation of air. The height of the instruments above the sod is 8 feet. The door of the shelter opens toward the west.

The barometer (a Green standard) is hung against the wall of a room (heated in winter) on the first floor of the academy.

The rain-gauge is situated in an open plat of ground near the instrument shelter.

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### MOHAWK VALLEY — ONEIDA COUNTY.

STATION, ROME — H. C. SUTTON, M. D., OBSERVER.

Date of establishment not known; equipped by the State Service in October, 1890; latitude,  $43^{\circ} 11'$  north; longitude,  $75^{\circ} 28'$  west; elevation, 445 feet.

Rome is situated at the western extremity of the Mohawk valley near the summit of the water-shed separating the Hudson river system from that of the great lakes. The valley at this point is broad and flat, opening westward toward Oneida lake and the great lake region. The exposure of instruments has been changed several times during the two years past; but at present the maximum and minimum and dry and wet bulb thermometers are secured to the northern post of an open summer-house, whose roof affords a protection from rains, and, with buildings toward the east and west, excludes the sun at all hours.

The rain-gauge is located south of the summer-house at an ample distance from buildings. Its top is 12 inches from the ground.

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### MOHAWK VALLEY — ONEIDA COUNTY.

STATION, UTICA — MR. THOMAS BIRT, OBSERVER.

Established (?); latitude,  $43^{\circ} 05'$  north; longitude,  $75^{\circ} 13'$  west; elevation, 537 feet.

This station is located in the city of Utica, at Mr. Birt's residence. Utica is situated in the upper Mohawk valley, which at this point is broad and flat, while the hills bordering its northern

and southern sides are much lower than in the eastern portion of the valley. The ground slopes gently downward from the meteorological station to the Mohawk river, more than one mile distant.

Mr. Birt's dry, wet, maximum and minimum thermometer (H. J. Green's standard) are exposed in a louvered shelter whose dimensions are: Length 3 feet 6 inches, depth 1 foot 4 inches, and height 3 feet 4 inches. The shelter is fastened to a tree 10 feet from the rear of Mr. Birt's house, at a height of 2 feet above the ground.

The top of the rain-gauge is 4 feet 6 inches above the ground, its distance from the nearest building (17 feet in height) being 18 feet.

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### CHAMPLAIN VALLEY — SARATOGA COUNTY.

STATION, SARATOGA — CAPTAIN A. R. McNAIR, OBSERVER.

Established October, 1890; special temperature station; latitude,  $43^{\circ} 05'$  north; longitude,  $73^{\circ} 48'$  west; elevation, 270 feet.

The general surface in the vicinity of Saratoga is a plain bordered on the west by the Palmerstown range of hills, and on the east, ridges of lesser height separate the plain from the Hudson river. This station is, no doubt, subject to the conditions of both the Champlain and Hudson valleys; but the character of the topography of Saratoga county indicates that the prevailing air currents are from the north rather than the south. There are no records of previous systematic meteorological observations for Saratoga covering a period longer than one year.

The thermograph was removed in May, 1892, from the location described in the report of 1890, and is now exposed out of the north window of the tower of the High School building, at a height of 50 feet from the ground.

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### CHAMPLAIN VALLEY — WARREN COUNTY.

STATION, GLENS FALLS — MR. C. L. WILLIAMS, OBSERVER.

Established October, 1891; latitude,  $43^{\circ} 19'$  north; longitude,  $73^{\circ} 40'$  west; elevation, 340 feet (approximately).

Glens Falls village is at the southern border of Warren county, on the bank of the Hudson river, which at this point

flows eastward through a broad valley. The country is nearly flat toward the south, and also northward as far as the French mountain range on the eastern shore of Lake George.

The station is located at the Glens Falls academy, No. 60 Warren street. The shelter is secured to the northern side of a wood building, 10 by 10 feet, which is built against the brick school building. The shelter is 30 inches high by 18 inches deep by 24 inches wide. Its sides are of wood, free air circulation being obtained by slits at all the edges, and through the wire screen in front. The height of the thermometers (dry, wet, maximum and minimum) is 4 feet from the ground.

The rain-gauge is placed 2 feet above an open plat of ground and 60 feet from any buildings.

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#### ST. LAWRENCE VALLEY — ST. LAWRENCE COUNTY.

##### STATION, CANTON — PROFESSOR HENRY PRIEST, OBSERVER.

Established by the Signal Service November 1, 1839; latitude,  $44^{\circ} 35'$  north; longitude  $75^{\circ} 12'$  west; elevation, 304 feet.

This station is located on Judson street, near the summit of a low ridge, which extends nearly north and south along the eastern outskirts of the town. The instrument shelter is several feet higher than the top of the ridge. The general surface of the ground about the station is nearly a level plain, broken only by a few hills of slight elevation. The dry and wet bulb and maximum and minimum thermometers, hang on the north side of Professor Priest's residence, in a window shelter 15 feet above the ground. The louvred sides are about 2 feet in height and depth, and are secured to the upper portion of the window casing with slanting roof. The adjacent room is not heated. The rays of the sun can reach the shelter during the early and late hours of the day. Also, a dark shingle roof, 7 feet below, is apt to overheat the thermometers. The shelter is open at the front and bottom. The rain-gauge is about 60 feet north of the house, about 25 feet from the trees of an adjacent orchard and 2 feet above ground.



**ST. LAWRENCE VALLEY — FRANKLIN COUNTY.****STATION, MALONE — MR. A. B. JOHNSON, OBSERVER.**

Established in the town in November of 1889, and discontinued in the summer of 1890; present station was established in November, 1890; latitude  $44^{\circ} 57'$  north; longitude,  $74^{\circ} 19'$  west; elevation, 810 feet.

The town of Malone is at the base of the lower foot hills of the Adirondacks, from which the ground slopes gradually and uniformly to the St. Lawrence river, 18 miles distant. The station is located on the summit of a rise of ground 11-2 miles south-southwest of the town, and about 200 feet above the tracks of the Vermont Central railroad. The station commands a very extensive view of the St. Lawrence valley toward the north and west, and of the Adirondack mountains to the southward.

The dry, wet, maximum and minimum thermometers are exposed about 15 feet from the northern side of Mr. Johnson's residence, in a shelter built after the specifications of the United States standard.

The rain-gauge stands in an open space 90 feet distant from the nearest buildings and 3 feet above the ground.

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**ST. LAWRENCE VALLEY — ST. LAWRENCE COUNTY.****STATION, NORTH HAMMOND — MR. C. A. WOOSTER, OBSERVER.**

Established (by the National Service with a standard thermometer) in November, 1888; and completely equipped by the State Service in December, 1889; latitude,  $44^{\circ} 30'$  north; longitude,  $75^{\circ} 40'$  west; elevation about 340 feet.

This station is situated in the open country 6 miles north of the Hammond depot of the Rome, Watertown and Ogdensburg railroad, and about 1 mile from the St. Lawrence river. Northward from the station the surface of the country is nearly flat with a gradual slope towards the river; whilst toward the east, and 300 feet from the station, the general surface rises some 30 or 40 feet. There are no high hills in the vicinity of the station.

The dry, wet and maximum and minimum thermometers are exposed on the northwestern side of a wing of the observer's

house, and under the roof of a piazza 5 feet wide. The instruments are secured to the wood work of the wing 6 feet above the floor and 9 feet above the ground. The room within is heated throughout the year; but as a check, a standard thermometer located in a shaded position away from the veranda is read at each observation, and thus far the results have agreed very closely. The sun's heat is excluded from the piazza until late in the afternoon when the floor and the walls are liable to radiate their heat to the instruments. Efforts have been made to remedy this defect. The rain-gauge is located about 35 feet west of the wing of the house (1 1-2 stories in height), and a distance from a low outbuilding equal to the height of the latter. The top of the gauge is about 5 feet above the ground.

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#### ST. LAWRENCE VALLEY—ST. LAWRENCE COUNTY.

STATION, POTSDAM—MR. G. W. F. SMITH, OBSERVER.

Established December, 1899; latitude, 44° 40' north; longitude, 75° 01' west; elevation, 300 feet.

This station is situated on Leroy street, Potsdam, at a distance of 1 mile north from the center of the town, and well removed from other buildings. The station is about 100 feet above the tracks of the Rome, Watertown and Ogdensburg railroad on the summit of a knoll which is the highest point within a radius of a mile. The ground slopes gradually away from the station in all directions. The surrounding country is flat as far as the Adirondack foot hills, nearly 10 miles distant.

The dry and wet bulb and maximum and minimum thermometers are exposed in a shelter which is built out from the window on the north side of a low, unheated building attached to Mr. Smith's residence. The shelter is louvred at the sides and front; and in the rear a small door gives access to the instruments from the interior of the building. The dimensions of the shelter are about 3 by 2 1-2 feet at the base and 3 feet in height. It has a slanting double roof and slat bottom. The rays of the sun touch the top of the shelter at noon, but are excluded from it at other times by the walls of the building, and also by

a pine tree west of the house. The walls adjacent to the shelter are of wood. The height of the thermometers above the ground is 6 feet.

The rain-gauge is located 70 feet north of the house, and about 25 feet from a few small fruit trees. The top of the gauge is 5 feet above the ground.

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### GREAT LAKES—CHAUTAUQUA COUNTY.

#### STATION, DUNKIRK—MR. WM. BOLLING, OBSERVER.

Established August, 1890; special temperature station; latitude,  $43^{\circ} 29'$  north; longitude,  $79^{\circ} 20'$  west; elevation, 590 feet.

The thermograph at this station, formerly in charge of Mr. D. C. Moon, and located near the center of the city of Dunkirk, was transferred to Mr. Bolling in August, 1892, and removed to his residence, situated on the shore of Lake Erie, about 1 mile west of the city limits. The instrument is exposed in an ordinary shelter fixed to the north side of an unheated shed, and is protected from the sun by projecting screens. It is about 600 feet from the lake shore, about 20 feet above the mean level of the lake, and 6 feet above ground.

Mr. Bolling reports also on precipitation; the rain-gauge being favorably exposed in an open lot. The plan upon which Dunkirk is situated forms the western limit of Chautauqua county, extending along Lake Erie from southwest to northeast, the high hills of the western plateau rising from it at a distance of about 2 miles from the lake shore. The plain widens gradually, while the hills decrease in height, to the north-northeast of Dunkirk.

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### GREAT LAKE REGION—ERIE COUNTY.

#### STATION, EDEN CENTRE—MR. WM. P. HUNT, OBSERVER.

Established December, 1889; discontinued October, 1890, and re-established July, 1891; latitude,  $42^{\circ} 40'$  north; longitude,  $78^{\circ} 55'$  west; elevation, 813 feet.

Eden Centre is a small hamlet situated on the line of the New York, Lake Erie and Western railroad, 18 miles south of Buffalo, and about 8 miles from the shore of Lake Erie; its

elevation above the lake level being 240 feet. The station is situated at the eastern border of the great lake region; the general surface being nearly flat to the shore of Lake Erie and the Buffalo plains; while a few hundred feet to the south and east of the station the ground rises abruptly to the highland of the Western plateau.

Mr. Hunt's dwelling is situated in the open country about one-fourth of a mile from the railroad station. The maximum and minimum thermometers are exposed in a shelter 4 feet square, having a flat roof and louvred sides on the west and north. The shelter is 30 feet from the nearest building, and at a height bringing the thermometers 5 feet above the ground.

The rain-gauge is on level ground, and 30 feet distant from low buildings in the vicinity.

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#### GREAT LAKES—MONROE COUNTY.

STATION, BROCKPORT—DR. F. A. WINNE, OBSERVER.

Established in February, 1890; latitude, 43° 13' north; longitude, 77° 58' west; elevation, 520 feet.

The instruments of the station are exposed above a brick block near the center of the town of Brockport. The surrounding country is similar in configuration to that near Lyons and Palmyra, an extensive plain, broken by low, isolated hills.

The thermometers are exposed in a shelter supported on a scaffolding at a height of about 9 feet above the roof, and 35 feet from the ground. In its form and dimensions, the shelter is constructed after the pattern adopted by the Signal Service. Its sides are of single-louvred work, excepting on the north, where a solid door is placed. The thermometers are attached to a board running horizontally across the center of the shelter. The roof below is of tin, painted brown. The shelter is unpainted. The thermometers are well above the surrounding buildings, and command a very free circulation of air.

Mr. Winne's barometer is located near the east window of a heated room in the rear of the second floor of his residence. Its height above tide is 540 feet.

The rain-gauge is placed on the roof, 12 feet from the shelter, and 12 feet from the side wall of the building which rises about 2 feet higher than the top of the gauge.

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### GREAT LAKE REGION—NIAGARA COUNTY.

STATION, HESS ROADS—MR. H. A. WAGONER, OBSERVER.

Instruments transferred from station formerly in charge of Mr. C. H. Spaulding in October, 1893; latitude,  $43^{\circ} 22'$  north; longitude, west  $78^{\circ} 41'$ ; elevation, 320 feet.

This station is situated about 2 miles northeast of the depot of the Rome, Watertown and Ogdensburg railroad, and is about one-half mile from the shore of Lake Ontario. The surrounding country is flat for a distance of several miles south of the lake, to the termination of the western plateau in the Limestone Ridge, so called.

The maximum, minimum, dry and wet-bulb thermometers, also a Draper thermograph, are hung on the north side of the house under a veranda; and are thus sheltered from sun and weather at all times. Their height above the ground is about 5 feet.

The rain-gauge is midway between house and barn, the distance from each being 60 feet. No trees interfere with the air circulation in its vicinity. The top of the gauge is 2 feet above ground.

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### GREAT LAKES—OSWEGO COUNTY.

STATION, PALERMO—MR. E. B. BARTLETT, OBSERVER.

Observations commenced in 1854; equipped with standard maximum and minimum thermometers (by Signal Service) in July, 1887; fully equipped by State Service in February, 1890; latitude,  $43^{\circ} 24'$  north; longitude,  $76^{\circ} 20'$  west; elevation, 460 feet.

This station is situated in the open country about 6 miles south-southwest of the town of Mexico, Oswego county. The surface of the surrounding country is rolling; the ridges, which are generally low, extending from northwest to southeast. A hill, said to be the highest point in Oswego county, lies 3.1-2 miles southeast of the station, but no marked rise of ground occurs until within half a mile of the summit. The station is

situated on the northern slope of one of the ridges mentioned. The ground rises rapidly for a short distance at the rear or south side of the station, but falls away from it on the eastern and northeastern sides, thus giving a free circulation of air from the east, north and west.

The thermometers are exposed in a shelter of the dimensions and pattern used by the United States Weather Bureau. This shelter is 6 feet above the ground and 17 feet from the north side of Mr. Bartlett's house.

The rain-gauge is 50 feet from the northeast corner of the house in a clear space. The bottom of the gauge is 1 inch above the ground.

Details as to the manner in which long records of temperature and rainfall were obtained by Mr. Bartlett may be found in the report of this bureau for the year 1890.

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## GREAT LAKES—WAYNE COUNTY.

STATION, LYONS—M. A. VEEDER, M. D., OBSERVER.

Date of establishment not known, but prior to 1888; latitude, 43° 06' north; longitude, 77° 00' west; elevation, 407 feet.

Mr. Veeder's house is on or near the summit of the gradual slope on which the town of Lyons is situated. The ground falls away gently from the station to the northeast and south, but toward the west is nearly level for a quarter of a mile, to the base of an abrupt ridge, extending in a north and south direction, and 75 to 100 feet in height. The general character of the surrounding country is that of a plain, broken by numerous isolated low hills. The thermometers are exposed in a single-louvred shelter, about 21-2 feet in width by 3 feet in height, which is placed out of the window of an unheated room on the second floor and north side of the house. The shelter has a sloping roof and its bottom is closed. The front and sides are of single-louvred work, while at the back the raising of the window-sash gives access to the thermometers. In the early summer the shelter is exposed to the sun up to about 9 a. m., but is shielded from solar rays during the remainder of the day.

The rain-gauge is placed on a roof having a southeastern exposure, and is 12 feet above the ground. A second roof rises about 6 feet above the gauge, at a distance of 18 feet from it, and 16 feet toward the northwest a roof also rises about 10 feet above the gauge.

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### CENTRAL LAKES — CAYUGA COUNTY.

STATION, FLEMING — MR. ROBERT WARWICK, OBSERVER.

Established December, 1889; latitude,  $49^{\circ} 51'$  north; longitude,  $76^{\circ} 38'$  west; elevation, 1,000 feet.

This station is situated in the open country, on the ridge of land lying between Cayuga and Owasco lakes, its distance from the latter being about 21-2 miles, and from the city of Auburn, 4 miles. The surface in the vicinity of the station is quite flat, but with a general slope downward toward the north.

The thermometers have recently been removed from the shelter described in the report of 1890, and are now exposed in a corn-house, whose north side is of open lattice work. The thermometers are suspended on the north side of the house, 3 feet from the lattice and 6 feet from the ground. The rain-gauge is located about 100 feet west of Mr. Warwick's house, and is well removed from obstructions to a free air circulation.

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### CENTRAL LAKES — ONTARIO COUNTY.

STATION, GENEVA — MRS. N. S. YATES, OBSERVER.

Established December, 1888; latitude,  $42^{\circ} 51'$  north; longitude,  $76^{\circ} 59'$  west; elevation, 450 feet.

This station is located at No. 72 Genesee street, in the town of Geneva, at the foot of Seneca lake. The high hills of the central plateau of the State terminate in the southern part of the central lake region, and the ground in the vicinity of Geneva is comparatively flat. The surface at the station slopes gradually down to the lake, which is about one-half mile distant.

The dry and wet, maximum and minimum thermometers are exposed in a double-louvred shelter (painted white), which is supported by a post at the height of about 5 feet above the ground.

The dimensions of the shelter are 18x30 inches at the base, and 30 inches from the bottom to the peak of the roof, which is double and ventilated. The main portion of Mrs. Yates' house is about 30 feet distant, toward the east. A few fruit trees in the vicinity of the shelter somewhat interfere with the air circulation about it.

The rain-gauge is usually placed near the shelter, at a distance of about 30 feet from the main portion of the house, but is sometimes moved to positions most open to air currents prevailing during storms.

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### CENTRAL LAKE REGION—SCHUYLER COUNTY.

#### STATION, WATKINS—GLEN SPRINGS SANITARIUM.

Established February, 1892; latitude, 42° 23' north; longitude, 76° 55' west; elevation, 787 feet.

This station is situated on a bluff of the western side of the Seneca Lake valley, at a distance of about 2,000 feet from the head of the lake.

The maximum and minimum, dry and wet bulb thermometers are located in a shelter somewhat smaller than the signal service standard, having three louvred sides and a solid door facing west. Its distance from neighboring buildings is 120 feet; and its height above the sod is 6 feet.

The rain-gauge is 2 feet from the ground, and is about 120 feet from neighboring buildings.

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### CENTRAL LAKES—SENECA COUNTY.

#### STATION, ROMULUS—MR. J. H. CORYELL, OBSERVER.

Instruments transferred from Mr. B. E. Hicks September 7, 1891; latitude, 42° 48' north; longitude, 76° 56' west; elevation, 719 feet.

This station is situated in the western part of the village of Romulus, near the summit of the ridge separating the basins of Cayuga and Seneca lakes. The high southern plateau terminates in a somewhat abrupt descent at Ovid, six miles south of Romulus, north of which a comparatively flat country extends to Lake Ontario.



The thermometers are exposed in a single-louvred shelter inches wide, 36 inches long, and 30 inches high, with a hinged bottom, and a drop-door in front facing the west. The shelter is located at the eastern side of the house, and is exposed to the direct rays of the sun only from 10 to 12 a. m. The instruments are hung in the center of the shelter at a height of 4 feet 8 inches above the ground.

The rain-gauge is 30 feet distant from any buildings or trees, the nearest of which are small shrubs 8 feet high. The gauge is 30 inches above the ground.

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### CENTRAL LAKES—TOMPKINS COUNTY.

STATION, ITHACA — AT THE COLLEGE OF CIVIL ENGINEERING, CORNELL UNIVERSITY.

Established 1874; special temperature station; latitude,  $43^{\circ} 27'$  north; longitude,  $76^{\circ} 29'$  west; elevation, 793 feet.

This station is situated on the hill bordering the eastern side of Cayuga Lake valley, its distance from the head of the lake being about one mile, and its elevation above the lake level, 400 feet. South of the city of Ithaca, which lies immediately below the station, the valley divides into two branches; the first a main branch extending through the hills toward the southwest while the second forms the narrow channel of Six-Mile creek which flows from the Highlands, southeast of the city, into Cayuga lake. The meteorological station has an open exposure toward the main valley on the west, while eastward, after a slight rise near the station, the surface is nearly flat along the course of the Fall creek; but numerous hills arise to heights varying from 300 to 500 feet above the general level, at distances of a mile or more to the southeast of the station.

The equipment of the meteorological observatory is as follows. First. A wind vane, located 7 feet above the peak of the roof at the northern end of the building. The rod supporting the vane passes down to the room beneath, and near its lower extremity carries a cylinder upon which the wind direction is automatically registered by machinery devised by the director. Second. A

anemometer, located near the vane is electrically connected with a Gibbon register on the first floor of the building. Third. A Fuess normal syphon barometer is placed in the clock-room in the basement of the building, and is used to check the readings of a Draper barograph near by. Fourth. A standard shelter of the Weather Bureau pattern stands on a sloping grass plat about 65 feet east of the building. In it are placed standard dry and wet-bulb, maximum and minimum thermometers, and a Richard thermograph. The height of these instruments above the sod is 6 1-2 feet.

A rain-gauge of standard construction and a Fergusson self-recording gauge are located beyond the shelter about 80 feet from the engineer's building, their tops being 3 feet above the ground.

Observations have been made by the engineering department since the year 1874 upon temperature, precipitation and wind direction and velocity, from the readings of standard instruments. Previously to the spring of 1890, the observatory was located about 200 feet south of its present position, and about 40 feet below it; but the exposure of the instruments being very similar, the records obtained are, without doubt, strictly comparable with the present observations.

A record of temperature and precipitation extending over 20 years was kept at the Ithaca academy, between the years of 1827 and 1852. The academy was situated in the valley bottom, where the atmospheric conditions differ somewhat from those at the present station.



# The Climate of the State of New York.

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By E. T. TURNER, Meteorologist to the New York Weather Bureau.

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NOTE.—This special report upon the climate of the State was originally intended to form a part of the investigations of the New York Meteorological Bureau as a foundation for a more advanced scheme of researches, still under contemplation, and now under way in some directions ; but at the request of the chief of the National Weather Service, who paid for the expense attending the work, and furnished valuable data, Mr. Turner was placed in charge of the preparation of this very valuable contribution to the climatology of New York. It is, however, due to Professor Harrington, the Chief of the National Weather Service, that this work of Mr. Turner be placed entirely to his credit, not only as a portion of the labors of the Government Bureau over which he presides, but also he is entitled to the thanks of the State of New York for his kind consent to anticipate the publication of the following monograph in the State report for the benefit of the interests involved. This publication will furnish answers to numerous questions that have been asked by a large range of correspondents upon the subjects which Mr. Turner presents in the most useful shape permitted by the condition of the data now available for the purpose.

E. A. FUERTES,  
*Director of the New York Weather Service*



# P R E F A C E .

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During the past seventy years a very large amount of data has accumulated, bearing upon the climate and weather of New York ; the efforts of the Smithsonian Institution and the New York Board of Regents having awakened a general and practical interest in these subjects early in the century. The system of observations organized by the Regents in 1826 at more than fifty schools and academies in the State is noteworthy as being the first important attempt made in this country toward the investigation of local climate. The general scheme of work adopted at the outset was very similar to that developed within recent years by the local weather services of the various States ; while the methods of observation were approved by competent meteorologists of the time. The Regents' system was finally discontinued in 1863 ; but thereafter records of the weather were maintained at several Military Posts as well as by numerous independent observers ; and between the years 1871 and 1874 five stations were established in New York by the United States Signal Service. The State Meteorological Bureau, which was organized in 1889, has also furnished valuable data from more than sixty well distributed stations.

The preparation of this report required a criticism of nearly all of the voluminous records thus obtained, and which have apparently been accepted without question hitherto. This feature of the work is described in some detail in section VI, and the considerations are there given which led to the exclusive use of recent observations wherever practicable, especially as regards temperature. The results of the Regents and other early observations have been, in part collated and summarized in the valuable essays of Hough<sup>1</sup> and Coffin,<sup>2</sup> and are also represented in the

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<sup>1</sup> *Essay on the Climate of the State of New York*, by F. B. Hough, Albany, 1887.

<sup>2</sup> *A Letter upon the Climate of New York*, by Professor J. H. Coffin. Contained in the "Natural History of New York State," Albany, 1843.

treatises of Schott<sup>1</sup> and Blodgett<sup>2</sup>. The statistics of climate the vicinity of New York city were consolidated and employed in special investigations by Dr. Daniel Draper, director of New York Meteorological Observatory.

The accompanying tables and charts are intended to give themselves a fairly complete account of the climate of the State, the text dealing mainly with the causes of the most important features thus shown. The relations of climate to plant growth and to sanitary conditions are barely touched upon, as results of value can be expected only from a thorough treatment of these subjects by specialists. Some topics which properly belong to a description of local climate are also necessarily omitted, or but briefly considered. Thus, no satisfactory account could be given of the irregularities to which rainfall is subject or of the rates of flow during storms, since the work of several years will be required to collect and properly discuss such data for the entire State.

The writer desires to express his indebtedness to Professor E. A. Fuertes, Director of the State Meteorological Bureau, for the use of records and results on file at the Central Office, and also to many persons named in the body of this report who have contributed valuable data in response to inquiries. Special acknowledgment is due to Mr. I. W. Brewer, who provided copies of a large number of manuscript records used in this investigation while on duty as an officer of the State Bureau.

## I. GENERAL CLIMATIC INFLUENCES.

Before proceeding to deal with the climate of the State properly it may be of interest to glance briefly at certain general meteorological influences to which our local conditions are mainly due.

The prevalence of westerly winds is the most obvious and permanent feature of the atmospheric circulation in the middle latitudes of the globe. This movement of the air masses in the west measure communicates the conditions of the continental interior to the eastern coasts, while in the same manner the influence of the ocean is extended well inland along the western coast.

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<sup>1</sup> Atmospheric Temperature and Precipitation in the United States, by C. A. Schott. Smithsonian Contributions to Knowledge, 2 vols., Washington, 1876 and 1881.

<sup>2</sup> Climatology of the United States, by Lorin Blodgett, Philadelphia, 1857.

During the winter heat is lost from large land surfaces by radiation much more rapidly than it is gained from the oblique rays of the sun, and consequently in high latitudes regions of intense cold are found within the continents. Over the ocean, on the other hand, radiation proceeds slowly as compared with the rate on land surfaces, while vast quantities of heat are gained from equatorial currents.

In summer the increased heat received from the sun is absorbed more rapidly by land than by water, so that the thermal relation between continents and oceans is the reverse of that which obtains in winter.

The result of these conditions, so far as temperature is concerned, is shown plainly in the following:

TABLE 1.  
AVERAGE TEMPERATURE IN DEGREES FAHRENHEIT.

*West Coast of America.*

STATION.	North latitude.	TEMPERATURE.	
		January.	July.
	Deg. Min.	Degrees.	Degrees.
San Francisco, Cal.....	37 46	59	66
Portland, Or.....	45 32	38	68
Olympia, Wash.....	47 37	38	62
Sitka, Alaska.....	57 03	27	54

*North Interior of America.*

St. Paul, Minn.....	44	58	8	72
St. Vincent, Minn.....	48	56	-10	65
Fort Simpson, British America.....	62	07	-18	59

*East Coast of America.*

Norfolk, Va.....	36	51	40	79
Washington, D. C.....	38	53	32	77
New York, N. Y.....	40	43	30	74
Boston, Mass.....	42	21	25	71
Portland, Me.....	43	39	22	69

*West Coast of Europe.*

Toulouse, France.....	43	37	39	70
Paris, France.....	48	50	36	65
London, England.....	51	33	38	64
Christiana, Norway.....	59	55	23	63
Hammerfest, Finland.....	70	42	23	54



From this table it will be seen that the westerly winds from the interior of America give the northeastern States about the same *mid-winter* temperature which prevails in western Europe at the arctic circle, while at our latitude the *mid-summer* heat of the two coasts is nearly equal on the same parallels. In general, north of latitude 40 degrees the *annual* temperature of land surfaces is less than that of the oceans.

A more detailed account of the character and climatic effect of prevailing winds requires some consideration of the distribution of atmospheric pressure. Air masses are forced out from regions of high toward those of low barometer, and, owing to a deflecting force due to the earth's rotation, these outflowing winds in the Northern Hemisphere also tend to circulate about the center of high pressure in the direction in which the hands of a watch move. The winds flowing toward a center of *low pressure* revolve about it in a direction *opposite* to the movements of watch hands.

The principal permanent high pressure system to be considered in connection with our own climate is the vast area stretching across the Atlantic between latitudes 20 and 40 degrees, moving somewhat northward from the average position in summer and autumn and to the south of it in winter. This area forms part of a belt of high mean pressure which extends around the globe near latitude 30 degrees north.

A permanent area of *low* barometer is found over the north Atlantic, with a minimum pressure of 29.4 inches to the east of Greenland in January. The depression is much less intense during the summer, but nevertheless controls the winds of the northern Atlantic and northeastern America throughout the greater portion of the year.

Thirdly, the intense winter cold of the land surfaces in the interior of the continent causes a contraction of the lower air strata and consequently an inflow at higher levels from surrounding warmer regions. Thus the mass of air becomes greater over the cold area and the barometric pressure increases. In summer the oceans become, relatively, cold areas, and hence a reversal of the above process takes place at that season, making the pressure over the continents lower than over the oceans.

Lastly, there is the very important class of shifting areas of low and high pressure known as cyclones or storms and anti-cyclones, respectively, and to these are due the abrupt weather changes common over the central and eastern States. Areas of this class present all gradations of size and intensity, in some cases controlling the winds and weather over the greater part of the continent, while in others their courses are barely traceable. Cyclones and anti-cyclones alike have a general easterly motion across the continent from their point of origin; the former usually bearing northward to the vicinity of the Great Lakes and the St. Lawrence valley and Gulf, while the average course of the latter is southeastward toward the general high pressure region of the Atlantic which has already been referred to. The rate at which cyclones traverse the continent ranges from 600 to 900 miles per day; while the average velocity of anticyclones is slightly less.

The climatic effects of the several pressure systems mentioned may now be considered; and first with reference to the conditions which obtain in winter. At that season the high pressure area of the central Atlantic extends also over the southern States, and is joined to the "high" which develops in winter over the interior of the continent, and whose maximum pressure of 30.2 inches is found over and to the northwest of Manitoba. On the other hand the low pressure area of the north Atlantic has reached its greatest central depression of 29.4 inches, while the borders of the system cover the great water areas which indent the eastern coast of British America; and, acting with the continental high pressure, gives strong northwesterly winds along the entire northeastern portion of America. The frequent passage of cyclonic storms over the lower lakes and the St. Lawrence Valley also brings these regions into the low pressure system; the line of demarcation between which and the high pressure system of the Atlantic and southern States is found to pass in the vicinity of this State. Thus, although our prevailing winter winds are northwesterly, a moderate variation in the intensity of the southern high or the northern low pressure area is sufficient to modify their direction very materially. For example, in January, 1890, the average pressure over the south-

eastern States was 0.2 inch above the normal value, while to the north of this State there was about an equal deficiency; and consequently the prevailing winds were southerly, raising the mean temperature for the month 10 degrees to 12 degrees above the normal.\*

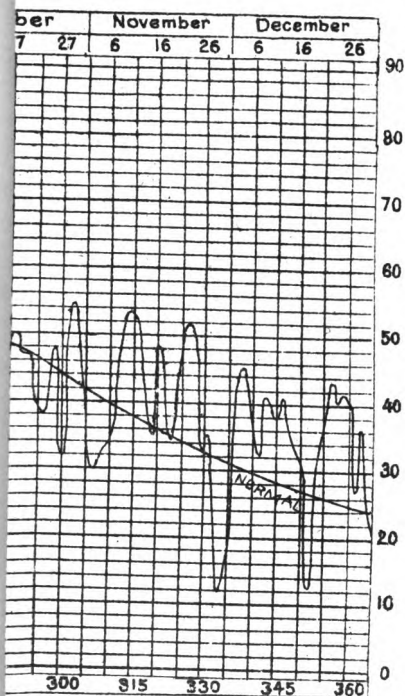
Every cyclonic storm which passes over or north of the State causes an increase of temperature, due, in part, to the southerly winds which flow towards the depressed area. Such events occur, on an average, five or six times during each of the winter months; so that by plotting the temperature of the State for each day, a curve is obtained similar to that shown in plate which represents the actual condition of pressure and mean daily temperature which obtained during the year 1891. The cyclonic systems give northwesterly winds in the rear of the storm centers, so that a considerable fall of temperature usually occurs after their passage; and this effect is frequently increased by the anticyclonic areas which follow, bringing masses of cold dry air from the interior of the continent to the eastern coast. The average difference between the extremes of daily temperature occurring in advance and in the rear of winter storms passing north of New York is about 16 degrees, as determined by an examination of fifty individual cases; the variation being greatest in the northern and least in the southern section of the State. Storms passing to the southwest of New York are also usually preceded by an increase of temperature in the region of the Great Lakes, and the southern and southeastern sections; while north of the Mohawk valley on northerly winds are felt, and therefore no rise of the temperature results. A depression which passes eastward over the center of the State may cause a great difference between the temperature in the northern and southern sections. A remarkable case of this kind occurred on January 11, 1890, when the mean daily temperature of stations in the St. Lawrence valley was 10 degrees lower than that obtaining near the Pennsylvania border.

During the average winter month two or three storms pass northeastward along the Atlantic coast. These are usually pre-

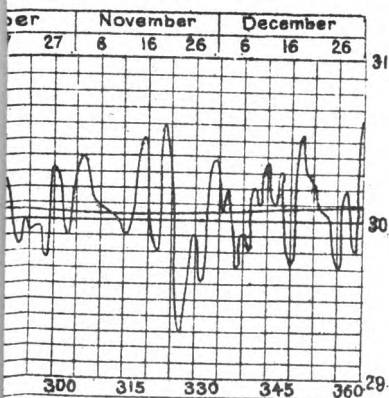
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\* An opposite effect is produced by an unusually low pressure over the north Atlantic, in conjunction with a strong development of the continental "high;" in which case the northerly westerly circulation is strengthened, and the low temperature of the interior extends to the eastern States.

VALUES.



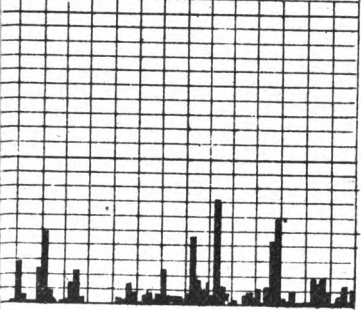
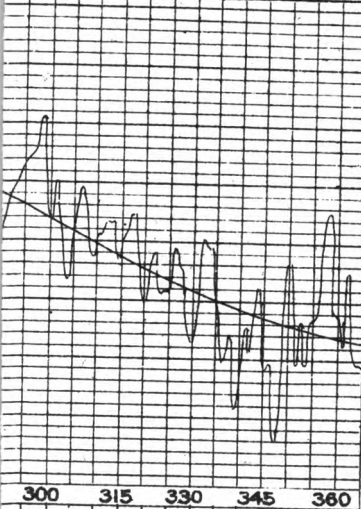
VALUES.



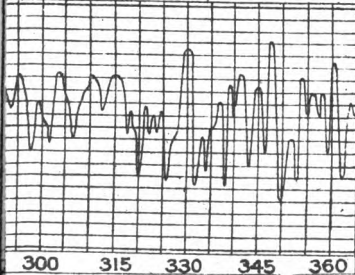
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er	November				December			
7	27	6	16	26	6	16	26	



er	November				December			
	27	6	16	26	6	16	26	





ceded by an increase of temperature in the southeastern sections, and by a decrease in the western and Great Lake regions.

There exists an intimate relation between the character of the air circulation and the precipitation of moisture over the State. Our northwesterly winds, are essentially dry, owing to the lack of moisture in the continental interior, and also, in winter, to the coldness of the air, which gives it a very small vapor carrying capacity. Hence precipitation during the winter occurs almost entirely in connection with storm areas passing in the vicinity of the State, and which mainly derive their supply of vapor from the inflow of moist air induced by them from the Atlantic, or from the region of the Gulf of Mexico. The heaviest precipitation accompanies the Atlantic storms and those passing up the Mississippi and Ohio valleys to the Great Lakes; both of these classes of storms being characteristic of the autumn and winter rather than of the summer months. Hence, while the winter is the driest season of the year over the greater portion of New York, it brings a heavy precipitation of rain and snow in the vicinity of the Atlantic coast, the southwestern highlands of the State, and the region of the Great Lakes. Over the Canadian provinces of Ontario and Quebec, the winter precipitation is exceedingly small; and this characteristic is shared by the St. Lawrence, Hudson and Champlain valleys and the central plateau of New York. The supply of moisture from the region of the Gulf of Mexico appears to be nearly exhausted before reaching the Canadian provinces and the St. Lawrence valley, although the southwestern Adirondack highlands receive a considerable rain and snow fall from southwesterly winds; while the moisture from the Atlantic is largely precipitated over the mountains of New England and northern New York.

During the winter months elongated depressions, or "troughs" of low pressure, are frequently formed over the eastern States; their longest diameter commonly extending from the region of the Gulf of Mexico to the Great Lakes, and including portions of the Ohio and Mississippi valleys. Such systems often derive their moisture both from the Mexican gulf and the Atlantic; and many of the heaviest rain and snow storms of the winter are due to conditions of this nature, especially in the



vicinity of the lake region and on the highlands adjacent to the Atlantic coast.

The character of our winters depends very largely upon the number and general course of the anticyclones. As previously stated, the usual course is somewhat south of east across the States toward the permanent Atlantic "high;" but in many cases the intense cold waves originating in British America move directly eastward along the Canadian border to the coast, and thence pass southward. Under such conditions the northern part of New York experiences the full effects of the cold waves, their severity in the more southern sections being usually somewhat decreased by the influence of the Great Lakes. Statistics as to the relative frequency and amount of temperature changes in various parts of the State will be found on page 398.

In the *spring*, and especially during April and May, the increased amount of heat received from the sun brings about a rapid modification and shifting of pressure systems, which are then less sharply contrasted than at other seasons. The winds decrease greatly in velocity, and their direction is variable, although the southerly component which is characteristic of summer becomes well defined during May. The pressure conditions of March are essentially those of a winter month, the high pressure systems over central British America and the southern Atlantic coast being still in force, while the cyclone of the north Atlantic continues to give northerly winds over eastern Canada and the adjacent States. In April and May the pressure has decreased over nearly the whole extent of North America, the barometer being relatively highest over the central and southeastern States, thus giving a condition similar to that described below for the summer season. A marked decrease in the number of cyclonic storms occurs from March to April and May; and the frequent showers which commonly occur during the latter months appear to be, more than at any other time, the effect of admixture of air currents having different temperatures.

An inspection of pressure charts for the *summer* months shows an area of low pressure over the northern interior of the continent in place of the anticyclonic area which was present there during the winter. The depression over the north Atlantic has decreased in intensity, while the high pressure system of the

central Atlantic has become stronger, controlling the winds over the ocean and on both the European and American coasts, between parallels 10 degrees and 50 degrees north. A western branch of this area also covers the southern and central United States as far as the Mississippi valley, and thus the southerly wind system of the western Atlantic is extended well into the interior of the continent, increasing to a marked degree the summer temperature of the northern States. (In southwestern Europe the Atlantic "high" produces an opposite thermal effect, since that region is on the eastern side of the anticyclonic center and hence is subject to northerly winds.) In summer, as in winter, any increase of pressure over the southern States tends to raise the temperature in the region to the northward, and when such an increase occurs in conjunction with a diminution of pressure over Canada a "hot wave" usually occurs in the northern States. The average path of cyclonic storms is more northerly than in winter, and comparatively few depressions pass to the southward or eastward of New York until August.

The Gulf of Mexico and the Atlantic Ocean contribute large supplies of moisture to the air currents which move northward over the States in summer. Hence, although cyclonic depressions are less frequent than at any other season, the rainfall accompanying each storm is heavy, and over the greater part of the country the maximum total precipitation for the year occurs in the summer months. The local showers and thunderstorms characteristic of the season usually accompany the passage of low pressure areas near the State; but such a condition is not necessary to their occurrence, especially in mountainous sections, where only a moist air and the convectional currents produced by high temperature appear to be necessary to local thunderstorm formation. The relative frequency of local showers in different parts of the State, as bearing upon the distribution of summer rainfall, will be referred to later.

Considering now the pressure conditions of autumn, we find that in September the anticyclonic area of the Atlantic has moved northward and that the maximum pressure, 30.1 inches, extends westward over the central Atlantic States, maintaining southerly winds along our coast. The western limits of the anticyclonic system are found beyond the Mississippi valley, and during

October the pressure remains high over the central and southern States, while diminishing over the ocean. The transient anticyclones of October and the early days of November show a strong tendency to drift very slowly over the region of average maximum pressure extending from the middle States to the central coast; and under such conditions the warm southwesterly winds and bright weather of "Indian Summer" prevail in the northern States.

The rainfall of September is usually light in the region east of the Upper Lakes, although no marked variation from the normal distribution of pressure characteristic of the month is required to bring about a heavy precipitation. For example, in September, 1890, the anticyclones moved to the northeastern rather than to the central part of our coast; and in one case, such an area, acting with a depression to the westward, gave easterly winds and phenomenally heavy rains over Central New York for several days; the pressure over the State being meanwhile unusually high (30.4 inches).

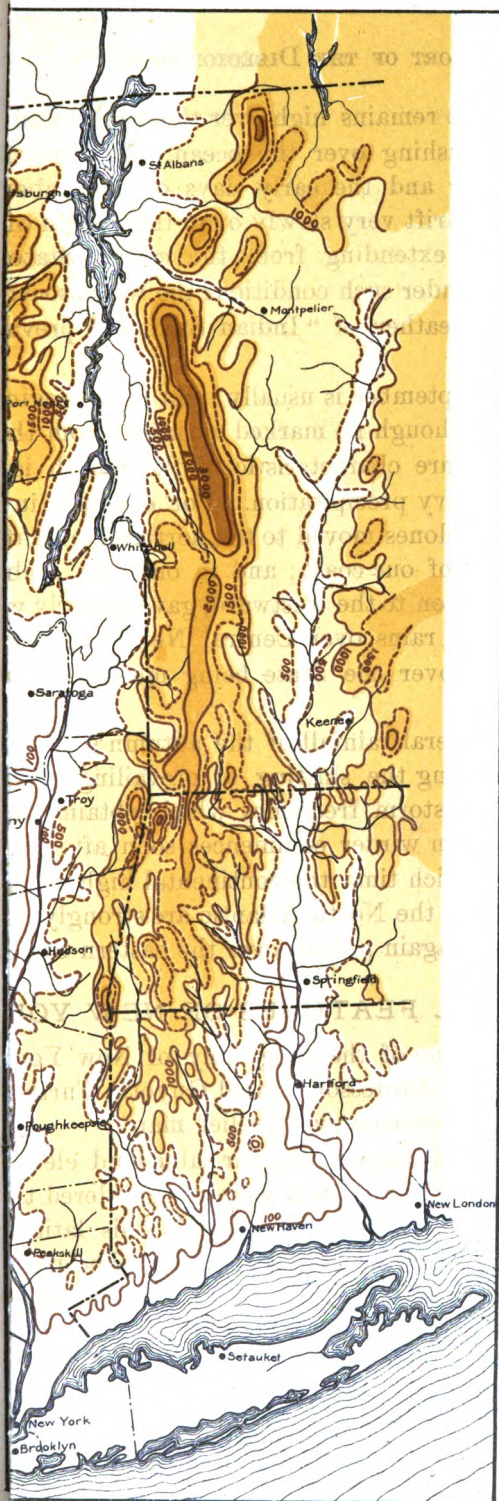
The maximum general rainfall of the autumn season occurs in October, accompanying the shifting of prevailing winds and a decided increase of storm frequency which obtains during the month. The northern winter commences soon after the middle of November; at which time the continental high pressure area and the depression of the North Atlantic are strongly developed, and northerly winds again prevail over the eastern States.

## II. PHYSICAL FEATURES OF NEW YORK.

The following outline of the orography of New York is substantially as given by Professor Arnold Guyot. Further details are exhibited by the accompanying relief map.

The mass of the State is a triangular table-land elevated 1,500 or 2,000 feet above the ocean, and may be considered the northeastern extremity of the plateau which, in this latitude, forms the western half of the Appalachian system. The natural limit of this belt toward the west and north is the large depression of Lakes Erie and Ontario, and which continues down the course of the St. Lawrence river to the ocean. In the east the table-land is terminated by the deep valley occupied by Lake Champlain and the Hudson River; while southward the highlands extend

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without interruption into Pennsylvania. The eastern edge along the Hudson and Champlain valleys is formed by a series of mountain chains more or less isolated from each other, and bearing the highest summits in the State. They are: The Highlands which cross the Hudson at the limit of the coast region; the Shawangunk and Catskill mountains on the western bank of the river; and the system of the Adirondacks covering the territory between the St. Lawrence and Champlain valleys. Within this eastern wall the true mountain chains cease; but the remainder of the plateau is indented by numerous valleys, the bottoms of which are generally several hundred feet below the common level, and which are separated by high ridges. A remarkable feature is the deep transversal cut which forms the valley of the Mohawk and Lake Oneida, opening a channel from the low country of the Lake Region to the Hudson valley; and thus dividing the main plateau into the distinct masses of the Appalachian and Adirondack systems.

A subdivision of the central or Appalachian highlands is due to the deep channel of Seneca Lake, extending from the plains bordering Lake Ontario southward to the valley of the Susquehanna. The two sections of the highlands thus separated are here designated as the *eastern* and *western plateaus*; the former extending from the central lakes to the Hudson valley, and the latter westward from the central lakes to the depression of Lake Erie.

## III. Tem

TABLE 2.—AVERAGE MONTHLY AND ANNUAL TEMPERA

STATIONS.	County.	Elevation above tide. Feet.	Length of record— years.	From-to	January.
<b>Western Plateau</b> .....		<b>1,287</b>			<b>22.0</b>
Sherman.....	Chautauqua.....	1,570	3	1890-92	22.0
Humphrey.....	Cattaraugus.....	1,950	8	1884-92	22.0
Alfred Centre.....	Allegany.....	1,824	4	1889-92	21.5
Angelica.....	".....	1,340	4	1889-92	21.5
South Canisteo.....	Steuben.....	1,480	4	1884-92	21.5
Addison.....	".....	1,000	3	1888-92	24.0
Elmira.....	Chemung.....	860	7	1864-60	23.0
Wedgewood.....	Schuyler.....	1,850	4	1889-92	21.5
Arcade.....	Wyoming.....	1,857	3	1890-92	20.5
Alabama.....	Genesee.....	648	2	1890-91	22.5
Pendleton Centre and Lockport.....	Niagara.....	580	4	1889-92	21.5
<b>Eastern Plateau</b> .....		<b>1,070</b>			<b>21.3</b>
Middletown.....	Orange.....	660	3	1890-92	26.0
Minnewaska.....	Ulster.....	1,800	3	1890-92	22.0
Liberty.....	Sullivan.....	1,500	7	1854-60	20.5
South Kortright.....	Delaware.....	1,700	3	1890-92	20.0
Quaker Street.....	Schenectady.....	978	3	1890-92	19.0
Middleburgh.....	Schoharie.....	640	3	1889-91	24.0
Cooperstown.....	Otsego.....	1,334	22	1871-92	20.5
Oxford.....	".....	".....	39	1854-92	20.3
Binghamton.....	Chenango.....	1,350	3	1890-92	20.0
Waverly.....	Broome.....	870	3	1879-92	23.0
Homer.....	Tioga.....	825	10	1883-92	20.0
Brookfield.....	Cortland.....	1,100	10	1854-63	20.0
Perry City.....	Madison.....	1,350	3	1890-92	20.0
	Schuyler.....	1,038	4	1889-92	21.0
<b>Northern Plateau</b> .....		<b>1,578</b>			<b>16.0</b>
Lyon Mountain.....	Clinton.....	1,917	2	1890-92	15.5
Number Four.....	Lewis.....	1,571	4	1889-92	16.0
Constableville.....	".....	1,246	4	1889-92	16.5
<b>Atlantic Coast</b> .....		<b>82</b>			<b>30.5</b>
Block Island, R. I.*.....		27	12	1860-92	31.2
Setauket.....	Suffolk.....	40	7	1886-92	30.5
Central Park.....	New York.....	97	22	1871-92	29.8
New York city.....	".....	164	31	1871-92	30.6
<b>Hudson Valley</b> .....		<b>221</b>			<b>21.5</b>
Garrisons or Ardenia.....	Putnam.....	157	20	1871-90	27.0
Stanfordville or Honeymead Brook	Dutchess.....	426	9	1888-92	24.2
Mountainville.....	Orange.....	218	4	1888-86	26.2
Albany.....	Albany.....	85	7	1886-92	23.0
<b>Champlain Valley</b> .....		<b>? 186</b>			<b>16.3</b>
Plattsburgh Barracks.....	Clinton.....	? 186	13	1880-92	16.3
<b>St. Lawrence Valley</b> .....		<b>431</b>			<b>15.9</b>
Gouverneur.....	St. Lawrence.....	400	10	1861-70	15.1
North Hammond.....	".....	? 340	4	1889-92	18.0
Canton.....	".....	304	4	1889-92	16.0
Potsdam.....	".....	300	4	1889-92	15.5
Malone.....	".....	810	2	1890-92	15.0
<b>Great Lakes</b> .....		<b>484</b>			<b>23.4</b>
Madison Barracks.....	Jefferson.....	266	22	1871-92	19.0
Oswego.....	Oswego.....	304	9	1884-92	22.5
Palermo.....	".....	460	22	1871-92	20.2
Lyons.....	Wayne.....	407	4	1889-92	24.0
Rochester.....	Monroe.....	621	22	1871-92	24.1
Hess Roads.....	Niagara.....	330	4	1889-92	23.1
Buffalo.....	Erie.....	690	19	1874-92	24.1
Dunkirk.....	Chautauqua.....	600	3	1890-92	27.0
Erie, Pennsylvania.....	".....	681	5	1888-92	27.0
<b>Central Lakes</b> .....		<b>645</b>			<b>24.2</b>
Ithaca.....	Tompkins.....	840	14	1879-92	24.4
Geneva.....	Ontario.....	450	16	1854-92	24.0
<b>Mohawk Valley</b> .....		<b>639</b>			<b>21.0</b>
Utica.....	Oneida.....	137	5	1888-92	21.0
Hamilton College at Clinton	".....	900	7	1854-60	21.0
Ilion.....	Herkimer.....	450	2	1880-90	21.0
<b>Average Temperature of the ten Regions</b> .....		<b>662</b>			<b>21.6</b>

NOTE.—For an account of the method by which averages are reduced to the 22 years period, see  
 \* Normal taken from "Monthly Weather Review."

perature.

TURES, REDUCED TO THE 22 YEARS PERIOD, 1871-1892.

February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Annual.
23.6	28.5	41.7	54.8	64.3	68.6	66.6	59.3	47.3	35.5	26.7	44.6
24.0	28.0	40.0	53.0	63.0	66.5	64.5	58.0	47.0	35.5	27.0	44.0
24.0	28.0	42.0	56.0	64.0	69.0	68.0	59.0	47.0	35.2	26.6	45.1
23.0	28.0	41.0	55.0	64.5	67.5	65.0	57.5	46.0	35.0	26.0	44.1
23.0	28.0	41.5	54.5	63.5	68.0	66.0	58.5	46.5	35.0	26.0	44.1
26.0	30.0	44.0	56.0	66.0	70.0	68.0	60.5	48.5	37.0	28.0	46.5
24.8	31.5	45.0	58.0	67.0	72.0	69.0	62.0	49.0	38.5	27.5	47.2
23.0	28.0	41.5	54.5	63.5	68.0	66.0	58.5	46.5	35.0	26.0	44.1
22.0	26.5	39.5	54.0	64.0	68.0	65.5	58.0	47.0	34.5	25.5	43.6
23.5	29.0	42.0	55.0	64.5	69.0	68.0	61.0	48.5	36.0	27.0	45.4
22.5	27.5	40.0	53.0	63.0	69.0	67.0	60.0	48.0	35.5	27.0	44.4
22.5	28.0	42.0	55.6	64.8	68.6	66.3	61.5	47.2	35.6	25.9	44.7
28.0	34.0	46.0	59.0	68.0	72.0	70.0	63.0	51.0	39.0	29.0	48.8
23.0	30.0	42.0	55.0	64.0	68.0	66.0	60.0	48.0	36.0	28.5	45.0
21.3	27.4	41.2	54.4	64.5	68.2	66.4	59.0	46.9	34.7	25.4	44.1
21.0	27.0	41.0	55.0	64.0	67.0	65.0	58.0	46.0	35.0	26.0	43.8
20.0	27.0	41.0	55.0	64.0	65.0	63.0	55.0	46.0	35.0	24.0	43.5
25.0	31.0	45.0	59.0	68.0	70.0	68.0	61.0	50.0	38.0	28.0	47.2
31.3	37.3	41.2	55.3	64.6	68.1	66.4	58.9	46.9	34.7	25.3	44.1
21.2	27.4	40.8	54.5	64.0	68.1	65.6	58.2	46.5	34.9	24.8	43.8
21.0	26.0	41.0	55.0	64.0	68.0	65.0	58.0	46.0	36.0	25.0	43.8
25.0	31.0	44.0	57.0	66.0	70.0	68.0	61.0	49.0	37.0	28.0	46.6
22.0	27.0	41.0	54.0	63.0	64.0	65.0	57.0	45.0	34.0	25.0	43.8
21.0	27.0	41.0	55.0	61.0	68.0	66.0	59.0	46.0	34.0	25.0	43.8
23.0	28.0	41.0	54.0	64.0	68.0	66.0	58.0	46.0	35.0	26.0	44.1
16.8	24.0	36.8	51.8	60.3	63.8	62.5	55.0	43.3	31.0	21.2	40.3
16.0	24.0	36.0	50.0	59.0	62.0	61.0	54.0	43.0	31.0	21.0	39.6
17.0	24.0	37.0	52.3	60.3	64.0	62.5	55.0	43.0	30.5	21.0	40.2
17.5	24.0	37.0	53.0	61.5	65.5	64.0	56.0	44.0	31.5	21.5	41.0
31.6	35.9	46.7	57.6	67.0	72.3	71.1	65.3	55.1	43.9	34.5	50.8
31.5	35.0	43.8	52.3	61.6	68.8	68.1	62.7	54.3	45.7	37.2	49.1
32.0	36.2	47.0	53.0	67.0	72.0	71.0	66.0	56.0	44.0	34.5	51.2
31.2	36.1	48.8	60.7	70.9	75.0	72.9	66.4	54.6	42.7	33.4	51.8
31.7	36.3	47.9	59.3	68.8	73.5	72.4	66.0	55.3	43.4	34.0	51.6
26.9	38.2	46.2	58.8	68.1	72.0	69.6	62.8	50.8	39.0	28.5	48.4
26.8	34.7	48.2	60.2	69.2	73.2	71.4	63.6	51.6	40.6	29.5	49.8
26.4	32.8	45.1	57.6	66.3	70.3	68.3	61.9	50.0	37.9	28.0	47.8
27.9	33.2	45.3	57.4	67.1	71.0	68.5	62.0	50.3	38.6	28.7	48.0
24.5	32.0	46.0	60.0	69.5	73.6	71.1	63.7	51.6	39.1	28.0	48.4
17.5	25.9	40.8	55.2	64.7	69.9	67.5	58.6	46.9	34.5	21.8	43.2
17.5	25.9	40.8	55.2	64.7	69.9	67.5	58.6	46.9	34.5	21.8	43.2
17.3	26.5	40.4	55.5	64.2	68.2	65.9	58.4	45.7	33.2	22.2	42.8
18.0	26.0	40.0	55.0	64.0	68.0	66.0	59.0	46.0	34.0	22.5	42.8
19.0	26.0	41.5	56.5	65.0	69.0	67.0	60.0	47.0	34.5	24.0	44.1
17.0	26.0	40.5	56.0	64.0	68.0	65.7	58.0	45.5	33.0	22.0	42.6
16.5	26.0	40.0	55.5	64.0	68.0	65.5	57.5	45.0	32.5	21.5	42.3
16.0	26.0	40.0	55.5	64.0	68.0	65.5	57.0	45.0	32.0	21.0	42.0
24.2	29.9	42.0	54.8	64.9	69.8	68.1	61.1	49.3	37.3	28.4	46.0
19.5	28.0	40.5	55.0	66.0	70.0	68.0	61.0	48.0	36.0	25.0	44.6
23.4	28.0	40.8	53.8	62.6	68.5	68.0	61.0	49.5	37.0	27.5	44.8
23.0	26.0	39.7	54.6	64.5	68.4	68.4	58.9	46.5	34.5	24.7	43.9
24.5	30.0	43.0	56.0	65.0	70.0	68.0	61.0	49.0	37.0	28.5	46.3
26.0	30.3	43.3	56.4	65.9	70.5	68.8	62.0	49.8	37.5	28.5	46.8
23.5	29.5	42.0	52.5	64.5	68.5	67.0	59.5	48.0	37.5	28.5	45.3
24.7	30.0	41.3	53.7	64.3	69.9	68.6	62.0	50.2	38.0	29.2	46.3
27.6	32.5	43.5	55.6	65.5	71.0	69.1	62.5	51.4	39.7	31.9	48.0
27.6	32.5	43.5	55.6	65.5	71.0	69.1	62.5	51.4	39.7	31.9	48.0
25.8	30.6	44.2	57.3	66.0	70.8	68.7	61.6	49.6	37.1	28.3	47.0
26.5	31.1	44.4	57.5	66.1	70.7	68.5	61.2	49.2	37.2	28.5	47.1
25.0	30.0	44.0	57.0	66.0	71.0	69.0	62.0	50.0	37.0	28.0	47.0
22.8	28.8	42.8	55.8	65.0	69.2	67.3	60.0	48.0	35.0	25.8	45.2
22.5	28.0	43.0	56.0	65.0	69.0	67.5	60.0	48.0	35.0	26.0	45.2
23.0	28.5	42.5	55.5	65.0	69.5	67.5	60.0	48.0	35.0	25.5	45.1
22.5	29.0	43.0	56.0	65.0	69.0	67.5	60.0	48.0	35.0	26.0	45.2
22.9	29.2	42.3	55.7	65.0	69.3	67.4	60.4	48.3	36.3	26.3	45.4

section IV. Averages have been corrected for hourly variation by McAdie's tables, when possible.



### III. TEMPERATURE.

The temperature conditions which prevail in the vicinity of New York, and the general influences to which they are due, have already been referred to in section I. The local variations of temperature and their effects within the State itself are shown in detail by the accompanying tables and charts, as regards both average and extreme conditions, dates of frost, and periods of navigation in lakes and rivers.

In referring special features of temperature distribution (as exhibited by the tables), to their proper causes, the effect of *altitude alone* upon the normals of the various stations should, in the first place, be eliminated by reducing the temperatures at all stations to sea-level. The results of such a reduction are shown by means of isothermal lines drawn for the months of January and July respectively, in diagrams 1 and 2. For reasons which will appear farther on, it has been assumed that the temperature is lowered at the rate of 0.3 degrees F. per 100 feet of increased altitude in January, and 0.4 degrees per 100 feet in July. The rate of decrease is probably not perfectly constant for the entire State, but must be assumed to be so for purposes of comparison.

The first point to be considered is the variation of climate which may properly be attributed to *differences of latitude* within the State. The average temperature of the globe at the latitude of New York's southern boundary (40 degrees 40 minutes north) is for the year 55.6 degrees\*; for midwinter (January) 38.9 degrees, and for midsummer (July) 72.5 degrees. Selecting the normals of New York city and Malone as representing the actual conditions which obtain at the northern and southern boundaries of the State respectively, the following deviations from strictly average conditions are shown :

At New York city the temperature (reduced to sea level) for

The year is 4.0° below the average of Lat. 40° 40'.

January " 9.0° " " " " " "

July " 1.5° above " " " " " "

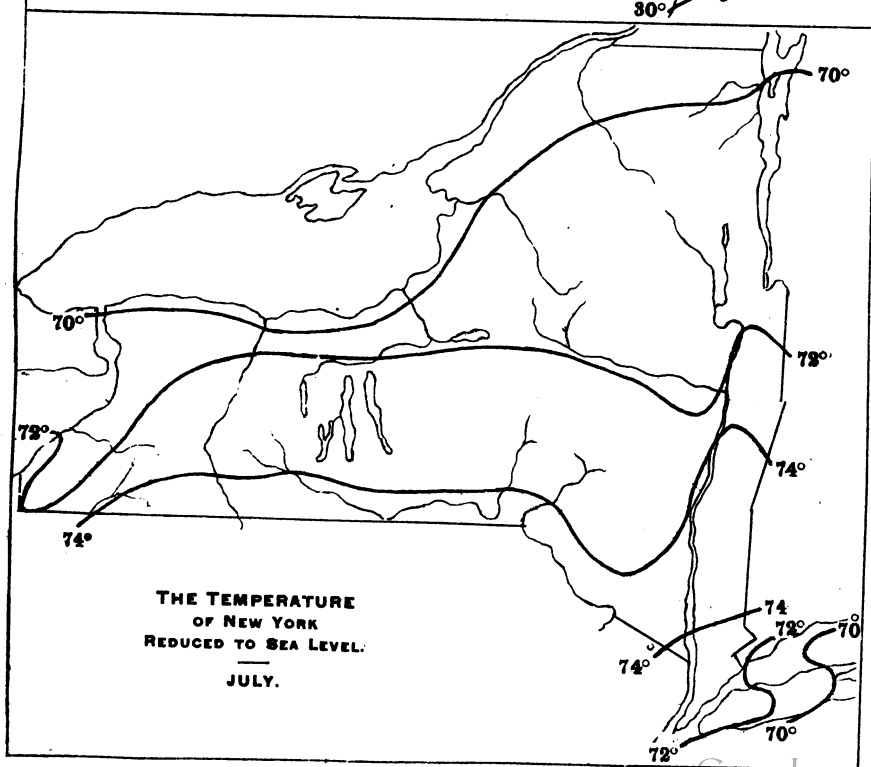
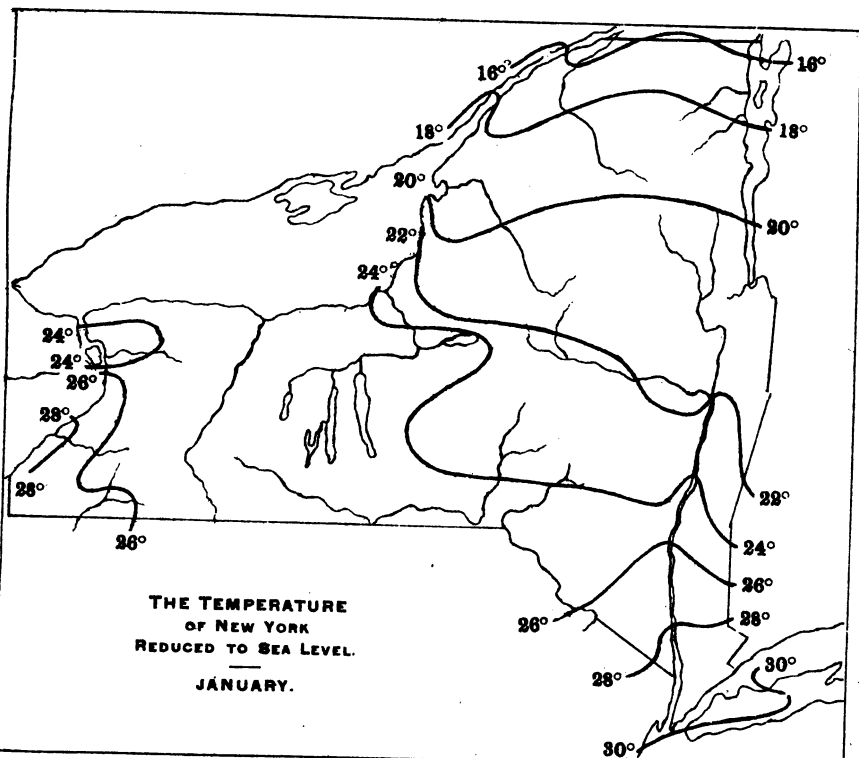
At Malone the temperature (reduced to sea-level) for

The year is 5.2° below the average of Lat. 45° 00'.

January " 14.2° " " " " " "

July " 1.3° " " " " " "

\* The values here given were computed from the determination made by Ferrel, "*Recesses Advances*," p. 158.





These departures, although considerable, are not greater than might be expected between restricted local conditions and an average which includes the widely different thermal states of oceans and continents. A better idea of the relation which temperature bears to geographical position is obtained by tracing over the northern hemisphere the thermal belt in which this State is included. It is to be noted that for this purpose continental temperatures have in all cases been reduced to sea-level.\*

The isothermal line of 70 degrees, which will be observed on the chart for July to pass from the Great Lakes over northern New York, extends thence eastward through New England to the vicinity of the coast, where it again turns toward the southwest, meeting the line of 70 degrees which appears over eastern Long Island. This isothermal then passes directly eastward over the Atlantic near parallel 40 degrees, intersecting the coast of Europe in northern Spain. Reaching the warmer land surface, it tends somewhat north of east through Central France, Austria, Central Russia and Siberia. Near the eastern coast of the latter country it turns southward through 20 degrees of latitude and passing to the Pacific over the Island of Japan, continues nearly eastward, meeting the coast of America in Central California. Thence it follows the meridian of 120 degrees west well northward into British America before again turning to the south east in the direction of the Great Lakes and northern New York.

The line indicating 74 degrees in July passes from New York directly southward over the ocean until opposite Virginia; thence slightly south of east to Morocco in North Africa, where it turns northward to France; thence passes through southern Europe (north of the Italian peninsula) to the Black Sea, through Central Asia at latitude 50 degrees, and near the coast turns southward to Japan. Diverging somewhat from the isotherm of 70 degrees, in its course over the Pacific, it touches America in Southern California, follows the Rocky Mountains northward to British America and thence takes a southeasterly direction to the Great Lakes and New York.

In January, New York is to be classed with quite different regions of the globe from those named above. The isotherm of 15 degrees, which appears near the northern boundary of the

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\* The isothermal charts of Buchan furnish the basis of the description given herewith.

State, passes thence over Labrador, the southeastern coast of Greenland and the Arctic Ocean. When well to the northward of Scandinavia it turns southeastward through Central Russia (passing north of St. Petersburg) to the northern border of the Caspian Sea. Proceeding eastward to northern Japan and northeastward over the Pacific it reaches the southern coast of Alaska, when it again trends southward to South Dakota and finally passes north of the Lake Region to the St. Lawrence valley.

The mean January temperature of 30 degrees (that of New York city) is found also in southern Newfoundland, Iceland and northern Norway. This isotherm turns sharply southward in the latter region and passes to eastern Germany, Austria and the northern border of the Black Sea, when its course becomes eastward to the Pacific. Like all the preceding lines it intersects Japan and thence passes northeastward to the Aleutian Islands. Following the American coast line to the border of the United States it turns southeastward to Missouri and thence passes to the southern shore of the Great Lakes.

As may be seen by the table on page 360, there are but few regions of the globe in which the cold gains so rapidly with increase of latitude as in the vicinity of New York, especially in the winter. This condition is due to the influence of the Great Lakes, which affect central and southern New York much more than the northern section, and also to the fact that the path of low pressure areas lies in close proximity to the State.

From the forms of the isothermals of charts 1 and 2 it is apparent that, after eliminating the differences of temperature due to elevation above sea-level, there remain three important sources of local variation in the climate of the State; namely, the ocean, the Great Lakes, and certain prominent irregularities of the land surface which modify the direction and force of the prevailing winds.

#### THERMAL INFLUENCE OF THE OCEAN.

*Atlantic Coast Region.*—Owing to the general eastward drift of the atmosphere throughout the year, the effect of the ocean upon the temperature of the Atlantic States is, under normal conditions, derived almost entirely from a restricted portion of the water surface contiguous to the coast. The air flowing toward low area storms over the

land may, however, occasionally be drawn from the region of the Gulf Stream, whose warmest axis is about 300 miles from the coast of this State. The Stream at this point has a total width of 300 miles (the width at the surface is considerably less); a mean temperature for the year of over 73 degrees; and summer and winter temperatures of about 80 degrees and 70 degrees respectively, in the latitude of New York. Notwithstanding the fact that cold or polar currents exist on the landward side of the stream, it is stated by Captain J. E. Pillsbury, U. S. N., that "if the prevailing winds in New England in winter were southeast instead of northwest, the climate would be equal to that of the Azores Islands, mild and balmy. The current is in its place, ready to give off heat and moisture to the air, but the erratic movement of the winds may deliver this heat and moisture at unexpected times and seasons, and thus give rise to the erroneous belief that the Gulf Stream itself has gone astray." The writer has met with no investigations of the meteorological side of the question, and only the general statement can be made, that, with a special distribution of pressure, extensive easterly wind systems may bring from the Gulf Stream to the coast quantities of heat sufficient to modify our climate considerably during very brief periods.

The temperatures of portions of the sea surface near the coast line are shown approximately by the following averages of observations made at Sandy Hook and Block Island, from 1881 to 1886 :

	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Sandy Hook.....	37.8	36.1	38.6	44.4	53.3	63.3	70.9	73.3	70.3	61.4	51.3	41.9
Block Island.....	37.1	34.6	36.5	42.5	49.8	58.4	65.5	67.2	64.5	57.7	49.8	41.7

The very considerable differences here shown between the temperatures of February and August, especially at Sandy Hook, are in part due to making the observations in very shoal water; but allowing for this, the annual range is large as compared with that of the open ocean, (usually between 5 degrees and 10 degrees), showing the effect of the land winds upon the temperature of the water.

The nearest approach to a true maritime climate within the territory of New York is to be found at the eastern extremity of Long Island. The temperature conditions of this region may be represented without much error by the average monthly values obtained at Block Island (see table 2), twenty miles due east.

These temperatures, although obtained at a distance of but fifteen miles from the mainland of New England, will be found to follow quite closely the water temperatures previously given for Block Island, and to share their moderate annual range. The midsummer mean is, very nearly, that of Malone, at the northern boundary of the State; while the temperature for January is between those of New York city and Washington. The equalizing effect of the water is thus very appreciable, although far below that exerted in the open ocean, or on the western shores of the continents. A few examples of true maritime climates in various latitudes are given for comparison.

TABLE 3.

STATIONS.	North latitude.		AVERAGE TEMPERATURE.			
			Jan.	July.	Year.	Range.
	Deg.	Min.	Degrees.	Degrees.	Degrees.	Degrees.
Bermuda Islands.....	32	23	61	79†	69.6	18
Madeira.....	32	38	60	73	66	13*
Azores.....	38	08	57	72	63	15
Guernsey (Channel Islands).....	49	28	43	62	51	19*
Monach (Hebrides).....	57	32	42	57	49	15*
Dublin, Ireland.....	54	36	40	60	49	20
Block Island, U. S.....	41	10	31	69	49	38

The following places, on or near the mainland of the *western* shores of the continents, have a partially maritime climate :

STATIONS.	Latitude.		TEMPERATURE.			
			Jan.	July.	Year.	Range.
			Degrees.	Degrees.	Degrees.	Degrees.
Brest, France .....	Dec.	Min.	Degrees.	Degrees.	Degrees.	Degrees.
London, England .....	48	23	33	64	53	31*
Edinburgh, Scotland .....	51	33	38	64	51	26
San Francisco, California...	55	56	37	58	47	21
Olympia, Washington .....	37	48	50	60	56	10
Sitka, Alaska .....	47	37	38	62	51	24
	57	08	27	54	42	27

\* The true annual range is slightly greater than the difference between January and July means.

† Maximum occurs in August.

For the *interior* of the American continent, on the other hand table 1 shows annual ranges of monthly mean temperature varying from 64 degrees to 77 degrees. The greatest annual range of monthly mean temperature in New York State is 53 degrees at stations in the St. Lawrence Valley.

A comparison of the normal temperatures of Block Island for the spring and autumn with those of stations in New York plainly shows the effect of the ocean in retarding the progress of the seasons. The harmonic analysis applied to the monthly mean temperatures of New York State and also to those for Block Island shows the epoch of the principal component for Block Island to exceed that for the State by 12 degrees (of arc), so that, on an average for the year, the progress of thermal conditions on Block Island and eastern Long Island is 12.2 days later than in the main portion of New York. (Ferrel shows the average retardation of maritime, as compared with truly continental climates, to be from twenty to twenty-five days.)

A gradual modification of these conditions is found in passing from the eastern to the western extremity of Long Island. At East Hampton the annual range is already increased to 39.5 degrees, and at Setauket on the sound, about midway between Brooklyn and Montauk Point, the range is 41.5 degrees.

The sea breeze is an important feature of the summer weather along the south shore, tending to reduce the range of temperature by moderating the midday heat; but details as to its effect can not be given, as the writer has met with no systematic observations upon the phenomena for this section of the coast. The researches of the New England Meteorological Society, confined mainly to the coast of Massachusetts, show that on warm, fair days the sea breeze "reaches the shore commonly between eight and eleven o'clock in the forenoon with a velocity of ten or fifteen miles per hour, its velocity rapidly diminishing inland. It produces a distinct and agreeable depression of temperature on the coast, but the effect is not carried inland as far as the wind extends."

The breeze commonly penetrates inland about ten miles, but, naturally, to a greater distance when acting *with* the prevailing southwesterly winds of the coast, while it may be wholly overcome if opposing them. Thus the south shore of Long Island is



favorably situated to receive the full benefit of the sea breeze, which should penetrate well into the interior, although gaining considerably in warmth beyond the immediate shore line, as stated above.

The sandy plains of southern Long Island rise gradually toward a ridge of low hills extending through the center of the island nearly from the western to the eastern extremity and which bear a considerable growth of pine timber. The northern side of the island is therefore somewhat sheltered from the force of strong sea winds, which meet with but little obstruction on the southern shore.

The effect of the ocean upon the portion of the State lying north of the coast line mainly results from the passage of high and low pressure areas over the eastern part of the continent, as has already been mentioned. The prevailing northwesterly winds of winter, if uninterrupted, would maintain the severe cold of the continental interior quite to the coast line, while the normal southwesterly circulation of summer brings to New York land rather than sea winds. In reality, the State is subject to an alternation of maritime and continental climates, following each other at intervals of a few days in conjunction with cyclonic and anticyclonic movements; the continental type prevailing during the winter and the maritime during the summer. The entire State may be subject to the ocean winds or only a few of the southeastern counties; and hence no very sharp line of demarcation can be expected between climatic conditions adjacent to the coast and those inland. The flat country, which extends from Long Island Sound to northern Westchester county, is, however, most fully exposed to sea influences, the ridge of the highlands which passes in a northeasterly direction from Rockland into Putnam county offering the first obstruction to their penetration inland. No reliable observations covering a long period are available to show the precise effect of the highlands upon temperature; but results furnished by a few new stations during the past three years indicate that the conditions are more distinctly maritime on the southern than on the northern side, a result which receives some confirmation from the character of the rainfall in the vicinity, as will appear later. The isothermal charts accompanying this report accordingly show the section

south of the highlands to have a smaller annual range, cooler springs and warmer autumns than the remainder of the State.

Some special notes upon the climate of New York city are given on page 432.

#### THERMAL INFLUENCE OF THE GREAT LAKES.

Referring again to the charts of sea-level temperature, it will be observed that the Great Lakes cause a deflection of the isotherms similar to that due to the ocean. The temperature of the lake waters, and consequently of the air over them, follows the seasonal changes more rapidly than does the ocean, owing to the smaller mass of the former; but the situation of the lakes upon the western side of the State gives them a greater effect upon the prevailing winds, at least during the autumn and winter, than is derived from the Atlantic. The absolute effects of these inland seas upon the air temperature may be better studied in the interior of the continent than in New York, where a variety of other influences are also at work. For comparison, Moorhead and Duluth, Minnesota and Marquette, Michigan, are chosen; the three stations having approximately the same latitude and elevations. Moorhead represents a nearly pure continental climate; Duluth, 220 miles to the east, is upon the western border of Lake Superior; and Marquette, still 230 miles east of Duluth, is upon the southern shore of Lake Superior. The following table shows a modification of temperature which may be attributed to the influence of the lake.

STATIONS.	MONTHLY MEAN TEMPERATURE.			
	January.	July.	Year.	Range.
Moorhead .....	-1.5°	67.9°	36.8°	69.4°
Duluth .....	+8.6	66.7	39.2	58.1
Marquette .....	+14.3	66.0	40.6	41.7

The winds of summer are land winds for Duluth and Marquette, and hence modify the temperature less than the lake winds of winter.

The extremes and annual averages of monthly mean temperature for cities of both the upper and lower Lake Regions are given in the following table; and those for eastern New York are also added for comparison.

TABLE 4.

	STATIONS.	AVERAGE TEMPERATURE.			
		January.	July.	Year.	Range.
		Degrees.	Degrees.	Degrees.	Degrees.
Lower Lakes .....	Oswego .....	22.5	68.5	44.8	46.0
	Rochester .....	24.1	70.5	46.8	46.4
	Buffalo .....	24.1	69.9	46.3	45.8
	Erie .....	27.0	71.0	48.0	44.0
	Cleveland .....	25.5	71.5	48.8	46.0
	Detroit .....	25.1	72.0	48.1	46.9
	Port Huron .....	21.1	69.8	44.8	49.7
Upper Lakes .....	Chicago .....	24.1	72.3	48.5	48.2
	Milwaukee .....	18.6	69.4	44.9	50.8
	Duluth .....	8.6	66.7	39.2	58.1
Eastern New York ...	New York City .....	30.6	73.4	51.6	42.8
	Albany .....	23.0	73.6	48.4	50.6

Thus the cities of the Upper Lakes (excepting Duluth) do not differ greatly from those of the Lower Lakes in annual temperature, but the annual *range* of the former is somewhat larger, owing in part to their greater distance from the ocean.

The only observations upon the temperature of the Lower Lakes, off shore, which the writer has met with, are those made by Professor Dewey in 1838 and quoted in the report of Professor Coffin. "The temperatures are the averages of observations made at intervals of six or eight miles across Lake Ontario, from the Genesee River to Coburgh, Canada (not including those made near the shore), about a foot below the surface." For comparison, the mean temperature at Albany for the several half months during which the observations were made is also given here.

DATE OF OBSERVATION.	TEMPERATURE.	
	Lake.	Albany.
	Degrees.	Degrees.
May 14 and 15 .....	39.3	51.0
May 21 and 22 .....	39.0	61.0
June 19 .....	47.5	73.0
August 7 .....	66.0	78.0
September 4 .....	60.5	63.0
October 16 .....	53.1	42.0
November 13 .....	45.7	41.0

The low temperatures recorded in May are attributed to the melting of ice in Lake Erie, Professor Dewey stating that the lake frequently is not clear of ice until about the middle of the month. "Owing to its shallowness, Lake Erie is frozen over to a large extent nearly every winter from December to March or April, whereas the main body of Lake Ontario is sufficiently free from ice to permit navigation even in the severest seasons."

Local southwesterly winds prevail throughout the year on the southern shores of both lakes and over much of the territory between them, a result due in part to the deflecting influence of the hills of southwestern New York, as will be made apparent by an inspection of the accompanying relief map. The southerly component is especially prominent in summer, giving lake winds at Buffalo and land winds at Rochester, with a slightly lower temperature at the former than at the latter place. Thus, Buffalo may properly be selected to determine the maximum thermal effect due to the Lower Lakes, and for this purpose its monthly averages were analyzed by the method referred to in connection with the temperatures at Block Island. The results are given, together with those for St. Louis, as an example of a continental climate; Cooperstown as equidistant from the lakes and the ocean; Block Island and the State for the purpose of extending comparisons.

STATION.	Epoch* of first component.		Progress of temperature; days later than at St. Louis.
	Deg.	Min.	
St. Louis†.....	195	04	0
Cooperstown.....	202	38	7.5
New York State‡.....	202	56	8.0
Buffalo.....	206	36	11.5
Block Island.....	214	57	20.0

Probably somewhat more than the difference in epoch here shown between Buffalo and Cooperstown may safely be attrib-

\* The cosine formula  $T = A_0 + A_1 \cos. (x - e)$  is used here.

† Value as given by Ferrel.

‡ The periodic formula for New York State, from which the curve of plate 1 was constructed, is as follows:  $T = 45.9^\circ + 24.4^\circ \cos [t - (202^\circ 56')] + 0.76^\circ \cos [2t - (811^\circ 30')] + 0.45^\circ \cos [3t - (50^\circ 10')]$ . The mean monthly temperatures for the State used were the averages of the values at Humphrey, Cooperstown, Lowville (Regents' record), New York city, Albany, Plattsburgh, Canton, Oswego and Ithaca. The mean annual temperature thus derived for the State is  $0.5^\circ$  higher than that of Table 2.

uted to the influence of Lake Erie, owing to the greater distance of Buffalo from the ocean. The retarding influence of the lake will exceed the average value in the spring and autumn and will fall below it after the formation of ice in winter.

Lake Ontario exerts its principal thermal effect in tempering the cold waves of winter, which usually approach the State from the northwest. A single example will serve to illustrate this. On January 19th, 1892, an anticyclonic area passed eastward over Canada, giving northerly winds and very cold weather over the northeastern States. The following temperatures were obtained on the northern and southern shores of the lake, respectively :

DATE.	NORTH SHORE.		SOUTH SHORE.	
	Kingston.*	Toronto.	Oswego.	Rochester.
January 19, 8 A. M. ....	+ 2	+4	+12	+16
January 19, 8 P. M. ....	- 6	0	+ 8	+12
January 20, 8 A. M. ....	-22	-8	- 2	+ 6

The winds were northerly throughout the observations.

Here the lake appears to have maintained the temperature at Rochester from 14 to 28 degrees above the point to which it would otherwise have fallen ; and thus the very moderate annual minima shown by tables 9 and 10 are explained. The frequent occurrence of conditions similar to the above give to the south shore of Lake Ontario an average midwinter temperature 5 degrees higher than that of the north shore.

The effect of the Great Lakes, although appreciable in nearly all of the western and central New York, is most prominent over the land surfaces which slope toward them. Thus at Arcade, thirty miles from Lake Erie and nine hundred feet above its level, the temperature of May is reduced and that of October is raised about 1 degree, as compared with the values at Alfred Centre and Angelica, a few miles distant to the southwest of Arcade, but situated beyond the slope of the lake. Arcade, in fact, appears to mark the limit of distance at which the thermal

\* Kingston is near the head of the St. Lawrence river and at a greater distance from the lake than Toronto.

effects of the lakes can be distinguished from those of the ocean.

The most temperate climate of the Great Lake Region is that of the Chautauqua County "Grape Belt," which extends from the southern shore of Lake Erie up the lower slopes of the Chautauqua County hills; its length being about sixty miles, and its width from two to six miles. This section, represented by the stations Erie and Dunkirk, has the same annual, midsummer and midwinter temperatures as Mountainville in the Lower Hudson valley, but differs from the latter in its cooler spring and warmer autumn seasons. As will be seen further on, the date of autumn frosts is unusually late in the grape belt, and the minimum temperatures of winter are less severe than in any other portion of the State excepting the Atlantic coast region. The characteristic features of the climate are due to the lake and to the high hills which rise on the eastern side, somewhat in the form of a half ellipse or oval, approaching the lake most closely at the northern and southern extremities of the County, and leaving a large extent of sheltered territory in the centre. The highest altitude of the grape belt is found in the vicinity of Prospect, about 1,300 feet above tide, and 700 feet above Lake Erie. Assuming the decrease of temperature to be 0.4 degrees per 100 feet of altitude, as for the main portion of the State, the midsummer temperature of this upper limit is about 68 degrees.

The highlands of southwestern New York subside gradually toward the north, leaving a nearly level tract of country stretching between northern Lake Erie and the southern shore of Lake Ontario. The temperature of this region is mainly determined by the southwesterly winds from Lake Erie; but in the northern part a tract extending eastward from the Niagara River through Niagara and Orleans counties is subject to westerly land winds which blow over the isthmus between the two lakes, and hence are but little affected by the temperature of the water. The winter cold is therefore greater than in the adjacent territory on the northern side, while in summer the temperature is about 1 degree in excess of that on the border of Lake Ontario.

The final descent from the Western plateau of the State to the level of Lake Ontario is found in the "Limestone Ridge," an

abrupt declivity extending eastward from the Niagara River nearly parallel with the lake shore at a distance of about ten miles. This ridge breaks the force of southwesterly winds to some degree, and with the added effect due to the convex form of the lake shore in this locality, causes a more moderate winter climate in the northern portions of Niagara and Orleans counties than obtains in their central and southern sections.

The lowlands included in the system of the Oswego River, lying to the eastward of the Central Lakes, are more exposed to the winds of the Great Lakes than to those from other directions, and hence may properly be included in the region of the Great Lakes. The low and sheltered position of this tract gives it a high temperature relatively to the surrounding country, as shown by the few observations of temperature which have been made at Syracuse and other points within the region; and also by statements received as to the short duration of snow in winter, and the rapid advance of vegetation in the spring.

#### THE VALLEYS OF NEW YORK.

The principal regions requiring mention here as deriving peculiar climatic conditions from the form of adjacent land surfaces are the Hudson, Champlain, St. Lawrence and Mohawk Valleys, and the region of the Central Lakes.

The Hudson and Champlain valleys, taken together, form a deep channel, extending nearly northward from the Atlantic coast to the lower St. Lawrence Valley; the total length of the depression from the highlands of Rockland county to the northern border of the State being 270 miles. The valley is bordered on the east by the Green mountains of Vermont, and their southern branches in western Massachusetts and Connecticut; and on the west by the Adirondack system of northern New York, the Helderberg hills, the Catskill and Shawangunk mountains and the Highlands. A broad valley which opens out of the Hudson toward the southwest through Orange county, separating the Shawangunk ridge from the Highlands, is here included as part of the Hudson Valley.

The prevailing winds of the Hudson valley blow nearly north and south throughout the year; southerly winds predominating

in the vicinity of Albany from May to October inclusive, and northerly winds during the remainder of the year. Toward the southern limit of the valley the periodicity of the winds appears to follow that of the Atlantic, changing from south to north in September. No long records of the wind direction in the Champlain valley were procurable in a form suitable for comparison; but a five years series observed prior to 1850 indicates substantially the same conditions as at Albany.

The high temperature of the sheltered section of the lower Hudson valley is represented by the normals of Ardenia, while Honeymead Brook and Mountainville, although located within the valley slopes, are exposed much more to the conditions of the highlands. The annual ranges at the three stations vary but little from 46 degrees, which is below the average of the interior of the State, probably owing to the tempering influence of the ocean, although the advance of the spring and autumn seasons appears to be but little retarded by maritime influences. Proceeding northward to the comparatively open country stretching from the vicinity of Albany toward Lake Champlain, it is found that the summer temperatures are not reduced, while the winters are considerably colder. This increase of the annual range of temperature indicates that in summer southerly winds carry the warmth of the lower valley well to the northward and possibly even over the region of Lake Champlain, while a reverse direction of the winds of winter practically extends the limits of the Champlain valley climate below Albany, probably to the ridge of the Catskills on the western side and below them on the eastern side of the river. The river itself has little effect upon temperature during the winter, since it is frozen over, on an average, from December 16th to March 20th at Albany, and is also closed by ice during a portion of the winter below the northern Highlands. Tables showing the dates of opening and closing of navigation in Lake Champlain and the Hudson River for a long period of years will be found on pages 405, 406.

The northern portion of the Champlain valley, represented by Plattsburgh, is exposed to the northerly winds of winter, and hence its temperature then differs but little from that of the same latitude of northern New York generally. The summer



temperature is slightly higher than at any other stations in northern New York, owing to the shelter afforded by the mountains on the eastern and western sides. The annual range is exceeded only by that of Gouverneur.

#### THE ST. LAWRENCE VALLEY.

The long records obtained at Potsdam and Gouverneur prior to 1850 show that at the former station southwesterly winds prevail throughout the year and at the latter during all months excepting November, December and April, when the direction is northwesterly. That the winds of the Great Lakes are mainly of the same character has been already shown; and these find their natural outlet through the channel of the St. Lawrence Valley, as will be made apparent by an inspection of the relief map. Hence, in summer when the southerly component is at a maximum, this section may be included in the region of the Great Lakes, as regards its temperature conditions. In winter there are no obstructions to the northwesterly winds from the plains of Canada, and even the southern component is then frequently due to the deflecting influence of the Adirondack plateau upon winds blowing directly from the west \*

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\* The following table by Professor Coffin, giving the thermal effects of winds from various directions, is in agreement with the above statement. Local southwesterly winds in which the *southerly* component predominates may be considered as lake winds, and those in which the *westerly* component predominates as true westerly or even northwesterly winds. The second column shows the number of days, hours and minutes that the wind blew from each point of compass during the year; and the third, the average rise or fall in the temperature per hour during each wind, expressed in decimals of a degree. + denotes a rise, and - a fall.

COURSE OF WINDS.	Duration of winds.			Variation in temperature per hour.
	Days.	Hours.	Minutes.	
North .....	7	5	15	—0.197
North by east .....	5	22	15	—0.165
North-northeast .....	8	0	15	—0.144
Northeast by north .....	10	15	15	—0.063
Northeast .....	14	1	52	—0.015
Northeast by east .....	16	12	30	+0.094
East-northeast .....	13	4	38	+0.115
East by north .....	4	21	30	+0.077
East .....	2	15	15	+0.103
East by south .....	2	8	15	+0.162
East-southeast .....	2	15	45	+0.146
Southeast by east .....	2	13	15	+0.114
Southeast .....	2	17	29	+0.140
Southeast by south .....	4	3	8	+0.145
South-southeast .....	7	4	14	+0.138
South by east .....	8	7	31	+0.161
South .....	20	40	0	+0.314
South by west .....	21	4	45	+0.177
South-southwest .....	22	6	45	+0.162
Southwest by south .....	22	16	30	+0.065
Southwest .....	29	12	15	—0.018
Southwest by west .....	25	21	30	—0.055
West-southwest .....	16	23	45	—0.018
West by south .....	13	6	0	—0.081
West .....	17	5	45	—0.063
West by north .....	11	14	7	—0.069
West-northwest .....	8	19	8	—0.252
Northwest by west .....	9	8	53	—0.281
Northwest .....	8	20	38	—0.322
Northwest by north .....	9	15	37	—0.306
North-northwest .....	8	2	15	—0.276
North by west .....	6	9	46	—0.236

NOTE.—The broad surface of the St. Lawrence River somewhat modifies the temperature in its immediate vicinity, and its influence is especially beneficial in preventing early frosts in autumn. The coldest part of the region, on the other hand, appears to be that near the foothills of the Adirondack mountains, as in the case of Gouverneur, Watertown and Madison Barracks, which stations probably owe their extremely low minimum temperatures to the nightly down-flow of cold air from the highlands.

The following table furnishes a comparison between the temperature of northern New York as a whole, and other points of the globe having similar conditions.

TABLE 5.

	TEMPERATURE.			
	January.	July.	Annual.	Range.
	Degrees.	Degrees.	Degrees.	Degrees.
Northern New York .....	16	68	48	52
St. Paul, Minn .....	10	72	43	62
Omaha, Neb .....	17	77	49	60
Helena, Mont .....	15	67	43	58
St. Petersburg, Russia .....	16	64	38	48

#### THE MOHAWK VALLEY.

The prevailing winds of this deep depression between the highlands of northern and central New York are almost exclusively easterly and westerly, following the general course of the valley. Its temperature conditions are but little known from observation, excepting at Utica, which represents the cold section of the region. The winter temperature is here considerably below that at points of the Lake Region to the westward having substantially the same latitude and elevation, and differs but little from that of the highlands toward the south. The explanation of this peculiar condition lies partly in the exposure of Utica and its vicinity as far west as Palermo to northerly winds which have not passed over any portion of Lake Ontario; and also in part to the nocturnal downflow of air from the adjacent hills, to be referred to later. The summer temperature of Utica is, very nearly, that of the Lake Region.

Statement which the writer has received from persons familiar with the region of the Mohawk show that, in passing eastward, no substantial variation from the above conditions is met with until the valley broadens out in the central or eastern part of Montgomery County. Here the temperatures are similar to those of the adjacent portion of the Hudson valley; the latter being apparently rather the cooler region in summer owing to its greater exposure to northerly winds.

It may be remarked, as Coffin has already noted, that the temperature of the upper Mohawk valley is very near the average for the State as a whole throughout the year.

## THE CENTRAL LAKE REGION.

From a climatic standpoint this region may be taken to include Canandaigua, Keuka, Seneca and Cayuga Lakes; the lesser dimensions and greater elevation of Owasco and Skaneateles Lakes classifying them more properly with the plateau region. The basins of Keuka and Seneca Lakes are prolonged in nearly open channels, extending through the central highlands from the plain of the Great Lakes on the north to the valley of the Susquehanna on the south; the valleys of Cayuga and Canandaigua, on the other hand, being closed by high hills toward the south. The winds follow quite closely the direction of the valleys, especially in their southern portions, and hence must traverse a large extent of the lake surfaces.

The average annual temperature of the Central Lake region does not differ materially from that of the section bordering the southern shore of Lake Ontario, the annual *range* also being nearly identical in both regions.

The temperature conditions of Seneca and adjacent lakes were closely studied several years ago by W. D. Wilson, D. D., of Hobart College, Geneva, whose conclusions are as follows: In comparing the influence of the lakes upon Ithaca and Geneva, respectively, "Ithaca has the advantage of about half a degree of latitude and fifty feet of elevation, which, combined, make scarcely so much as one degree of temperature in its favor. \* \* \* The lakes are much the same in size, about forty-five miles long, with an average width of two or three miles. Cayuga Lake, however, is much the shallowest and freezes over more extensively than Seneca."

"The point of contrast, however, is chiefly this: The one (Ithaca) is at the south end and the other (Geneva) at the north end of a long body of standing water. \* \* \* In winter, while the water is warmer than the air and is also giving out heat by the formation of ice, the prevailing winds are the polar winds from the north; consequently they are warmed by the lake before they reach Ithaca, while these cold winds pass only over the land to convey the heat away from Geneva. But in summer, when the prevailing winds are the return current from the equator, those winds for Ithaca come from off the land and are not cooled by the lake until after they have passed

the town." Observations are then quoted, showing that "the influence is quite manifest in winter, producing a difference of 3.3 degrees in favor of Ithaca, their average being 29.4 degrees, ours 26.1 degrees. In summer the difference is slight and is in their favor until the last half of August. For the first half of September their average is 62.9 degrees, ours 63.3 degrees. For the last half theirs is 56.1 degrees, ours 57.6 degrees."

"During the whole of summer Ithaca's return current comes from over a tract of land which is quite uneven in surface and has a mean temperature considerably lower than Ithaca itself. During the first part of the summer, until about the middle of August, our return current comes, not from the lake at all, but from a point of the compass too far west of south to have been influenced by the lake. After the first of August we have a much larger proportion of southwest winds, and then we begin to feel the influence of the lake, and while the influence is in the direction of cooling during the day it effects a retardation of the process of cooling during the night, and thus, as I presume, while the average for the twenty-four hours is greater than theirs, our days are cooler and our nights are warmer than at Ithaca."

Making due allowance for the cooler exposure of the present University Station at Ithaca, which is four hundred feet above that referred to by Dr. Wilson, the normals given in the general table of this report are in substantial agreement with the above statements, which will also hold true of the Central Lake region as a whole.

#### THE HIGHLANDS OR PLATEAUS OF NEW YORK.

The rate at which the average annual temperature decreases with altitude is usually given as 1 degree to 300 feet of elevation, the rate being somewhat below this value in winter and above it in summer. The rule is subject to considerable local variation, however, and it was deemed best to make an approximate determination for this State. Owing to the variety of local influences which had also to be considered it was found necessary to make a trial of various factors of reduction and draw isotherms representing the results, accepting those which reduced the effects of altitude to a minimum. The rates of decrease in this case are 0.3 degrees per hundred feet of elevation for the winter and 0.4 per hundred feet for the summer, agreeing well with the usual

values. For the mountains of Northern New York, however, a factor much smaller than 0.3 degrees appears to hold for the winter months; but the latter was adhered to throughout in constructing the sea-level isotherms of plates 1 and 2.

The highland districts of Central New York are substantially alike in their temperature conditions, as these are shown by observation and also by the character and seasonal development of vegetation, and hence only a general account of their climate is required. The Adirondack Plateau has some distinctive features needing a separate statement.

In computing the temperature normals of the eastern and western plateaus, it was found that closer comparisons could be made between Cooperstown (chosen as the standard of reference) and nearly all other stations of the plateaus, than between the latter and low level stations of the coast and lake regions. In fact, the thirty-eight year normal of Cooperstown may, without much error, be taken to represent the temperature of the plateaus at the altitude of 1,000 to 1,500 feet throughout the central portion of the State. The western plateau shows, in winter, a slight excess of temperature (about 1 degree) over that of the eastern region, which may be attributed in part to the influence of the Great Lakes, and in part to the gradual manner in which the surface declines toward the north; Dr. Hann having shown that the prevailing air currents are generally less cooled when passing up a gradual incline than when the vertical gradient is large.

It has already been stated that the thermal influence of Lake Erie is distinctly noticeable in the spring and autumn over the large tract which slopes toward its surface; and that a difference of about 1 degree is thus brought about between western Wyoming County and adjacent stations in Allegany County. After the freezing of Lake Erie, the coldest region of the plateau appears to be the ridge separating the system of the Genesee River from that of Lake Erie. Lake Ontario, remaining open throughout the year, can not fail to temper somewhat the winter climate of the region as a whole.

It may be noted that Humphrey, in central Cattaraugus County, has a higher temperature than might be expected from its elevated position and the character of the surrounding country. This station belongs to the upper limit of the Ohio Valley, and it seems possible that special climatic conditions may thus be

introduced here. Southerly winds are found to occur at Humphrey more frequently than at adjacent stations to the northward; but whether these belong to a general system, or are merely local, must be decided by further observation.

The general equality of temperature over the eastern plateau is rather remarkable when the extent and irregular surface of the region are considered. The *sea-level* isotherms in the southeastern portion show the influence of the ocean to a small degree; but in fact this effect is masked by the high altitude and mountainous character of the section, excepting at Minnewaska, which overlooks the plains toward the southeast, and is fully exposed to air currents from that direction. Middletown, which occupies a sheltered position still further southward, may for climatic purposes be properly classed as a station of the Hudson Valley, to whose influences it is mainly subject.

The narrow valleys of the highlands are found to vary but little in average temperature from the adjacent hills; while in case of the broader depressions more heat is gained during the day than is lost at night by the flow of cold air down the slopes. Thus the mean temperatures of Binghamton, Waverly, Elmira and Addison, in the main branches of the Susquehanna Valley, are but little over a degree lower than those of the Central Lake region, although the difference is greater in the spring and fall, owing to the retarding influences of the lakes.

No statement can be made here as to the climate of the Catskill mountain region, owing to the lack of any adequate data.

*The Adirondack Plateau* is subject mainly to the same influences which determine the climate of the St. Lawrence Valley, excepting that the central and eastern portions of the highlands are not reached by the lake winds. A very broken and heavily timbered surface offers great obstructions to the circulation of air currents, and hence the summer temperature, although the lowest in the State, is somewhat higher than would otherwise be due to the elevation of the region.

The normals given in the general table can not be considered to be fully established, depending as they do upon a few brief series of observation. If even approximately correct, however, they represent a true anomaly of temperature during the winter, since the average values at some of the mountain stations are then higher than those recorded at stations of the St. Lawrence

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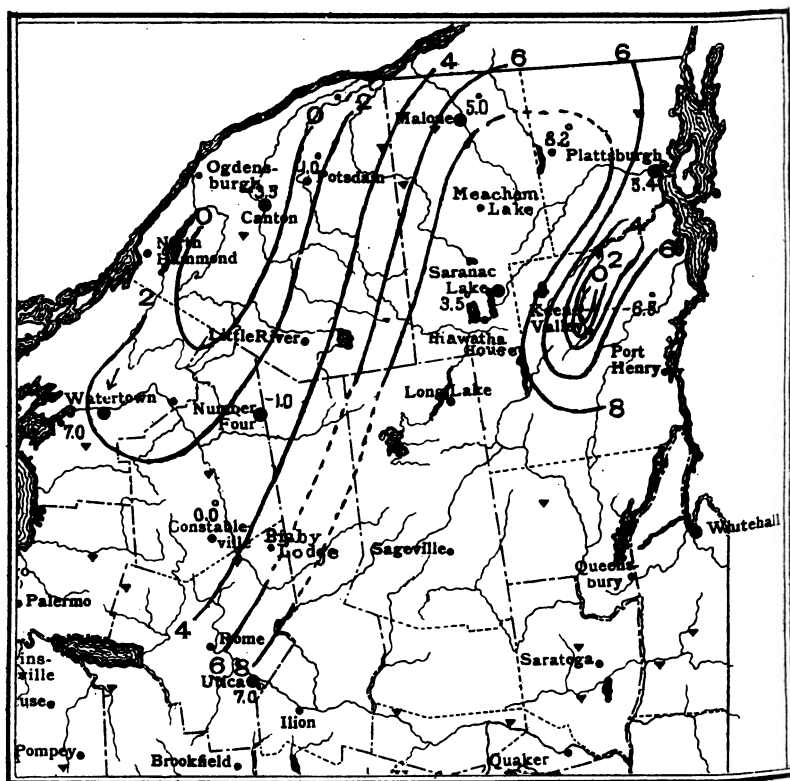
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# INVERSION OF TEMPERATURE IN NORTHERN NEW YORK, DECEMBER 8TH, 1890.



Isothermal Lines show the mean daily temperature as reduced to sea level by deducting  $0.3^{\circ}$  from the actual temperature for each 100 feet of elevation. Small figures show actual temperatures. [The mean temperature at Keene Valley was  $-6.5^{\circ}$ .]

Valley, more than a thousand feet below. In order to investigate more fully the existence of such a condition, several dates were selected when the region was subject to anticyclonic areas and their accompanying cold waves. An inversion of temperature was found to exist in a considerable number of cases, but most decidedly on December 8, 1890. The isotherms of the accompanying chart represent the average temperatures for that day in northern New York, as reduced to sea level by applying the factor 0.3 degrees for each 100 feet of elevation of the various stations, the accompanying figures showing the actual (unreduced) temperature at each station. Keene Valley, whose temperature ( $-6.5$  degrees) was the lowest of the series, is located at the bottom of a deep mountain valley or gorge in a position to receive the downflow of cold surface air from a large area in the vicinity. The distribution of temperature at the remaining stations, and especially at Canton, Lyon Mountain and Plattsburgh, is such as would be due to a rather rapid gain of warmth with increased elevation in the mass of the cold wave itself. Evidently, no very frequent recurrence of such a condition would be required to equalize the average monthly temperature of the valleys and highlands.

So far, then, as present records show, the whole of northern New York has substantially the same average winter temperature, excepting as certain deep valleys are subject to a local cooling through an accumulation of the colder and denser air. In summer the warmth of the highlands decreases at about 0.3 degrees per hundred feet of elevation above sea level; and the average temperature of the Adirondack region at that season is thus reduced to nearly the same value which obtains on the sea coast of northern Maine; the days, however, being warmer and the nights cooler than in the coast region.

*The New England Green Mountains.*—A third highland region of the State is that belonging to the system of the Green Mountains of New England, and extending over the New York border in Rensselaer, Columbia and northern Dutchess counties. The climate here appears to be colder than in the highlands of central New York at the same latitude, but no definite statements can be made, as observations representing this section are lacking at present. Some data which have been obtained upon frosts will be found on page 404.

TABLE  
EXTREMES OF MONTHLY AND  
*Fort Columbus. Record*

	JANUARY.		FEBRUARY.		MARCH.		APRIL.		MAY.		JUNE.	
	Temperature.	Year.	Temperature.	Year.	Temperature.	Year.	Temperature.	Year.	Temperature.	Year.	Temperature.	Year.
	Deg. F.	18—	Deg. F.	18—	Deg. F.	18—	Deg. F.	18—	Deg. F.	18—	Deg. F.	18—
Warm months.	39.6 38.5 37.0 36.5 36.4	90 80 70 48 89	41.3 39.2 38.1 37.3 37.2	28 30 42 67 34	44.6 43.9 43.7 43.3 43.2	28 52 25 65 72	53.6 52.9 52.4 52.1 52.0	44, 71 30, 78 22, 65 27 29	56.6 64.9 63.8 63.2 62.1	80 26 29 84 73	74.6 74.1 74.0 73.2 73.1	28 31 65 76 80
Cold months..	*19.6 22.5 33.8 24.0 24.2	57 56 40 27 67	21.5 22.5 23.1 23.3 23.9	36 68 85 38 55, 56	29.5 30.3 30.8 31.3 31.1	85 43 56 88 72	42.3 43.3 43.7 44.1 44.3	74 57, 75 52 50 36	54.4 54.6 55.0 55.3 55.9	50 52 49 37 68	62.6 63.4 64.5 65.7 65.8	36 39 37 86 81

*Rochester. Record*

Warm months.	38.5 32.7 32.6 31.6 31.0	80 90 58 38, 43, 76 33	34.5 34.1 32.7 32.2 31.5	84 57 82 40 90	40.3 40.1 40.0 39.8 39.0	59 78 31 42 71	54.3 52.7 52.5 52.4 48.0	30 33 44 78 40	64.3 62.4 61.9 61.7 61.5	80 87 38 81 59	72.1 71.4 71.1 70.1 70.0	70 54 53 58 31, 76
Cold months..	15.0 17.1 17.4 18.3 19.5	57 88 56 38 40	13.7 15.0 16.4 17.4 17.6	85 75 88 55 59	20.0 22.3 23.8 24.0 24.6	85 72 43 88 36	35.4 37.2 38.6 38.9 39.9	74 38 57 75 41, 50	49.0 49.1 50.2 51.1 51.3	67 50 52 49 61	60.2 60.7 61.1 61.5 61.9	39 42 81 62 47

*Potsdam. Record of 21 Years, 1828-1848,*

Warm months.	27.0 25.6 24.7 23.8 22.8	43 41 55 38 28	28.9 28.4 25.1 23.9 23.8	28 34 40 61 67	35.3 35.1 34.8 34.1 33.6	45 34 46 42 38	56.2 52.2 51.1 50.5 45.8	39 44 30 46 40	62.4 60.1 60.0 58.8 58.5	48 54 35 29 55	70.5 68.9 68.8 68.3 67.8	70 78 41 28 31
Cold months..	7.4 8.6 9.1 10.6 10.9	37 40 44 54 67	9.5 11.0 11.4 11.7 13.2	38 33 86 68 29	16.2 21.5 23.4 24.1 24.9	72 63 69 70 36	37.0 37.4 37.5 37.7 38.1	41, 47 68 47, 68, 75 62 38	48.0 49.8 49.5 49.6 50.3	41 42 67 61 66	56.7 59.6 59.9 60.0 61.0	38 42 62 69 63

*Burlington, Vt. Record*

Warm months.	29.9 28.0 26.9 26.1 25.5	80 43 89 76 90	28.4 28.1 26.7 26.6 26.0	40, 77 57 72 42 51	35.9 35.8 35.4 34.1 33.9	78 42, 71 59 45 46	49.5 49.0 48.4 48.2 47.7	44 78 68 89 46	64.9 61.3 61.0 60.2 60.1	87 89 79 81 80	70.7 70.2 70.0 68.9 68.3	84 70 83 38 76
Cold months..	9.9 10.5 11.0 11.2 12.2	44 88 57 65 40, 67	11.8 12.2 12.9 13.8 14.3	68 85 43 75 49	19.3 19.8 20.6 22.4 22.6	85 72 63 88 69	33.5 37.5 37.9 38.5 38.9	74 47, 68, 75 59 54 62	49.2 49.8 51.4 51.5 51.6	66 67 61 58 60	61.1 61.3 61.1 61.4 61.8	63 57, 63 65, 81 43 43

## EXTREME RANGES OF MONTHLY

Fort Columbus	20.0	19.8	15.1	11.3	12.2	12.0
Rochester .....	21.5	20.8	20.3	18.9	15.3	11.9
Potsdam and Gouverneur.	20.2	19.4	19.1	19.2	14.4	13.3
Burlington, Vt.	20.0	16.6	16.6	16.0	15.7	9.3

\* January, 1857, was the coldest month on record at Philadelphia and at New Bedford, Mass.; the  
† The coldest July at Philadelphia since 1771.

6.

## ANNUAL MEAN TEMPERATURES.

of 70 Years, 1822-1891.

JULY.		AUGUST.		SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.		ANNUAL.	
Temperature.	Year.	Temperature.	Year.	Temperature.	Year.	Temperature.	Year.	Temperature.	Year.	Temperature.	Year.	Temperature.	Year.
Deg. F.	18—	Deg. F.	18—	Deg. F.	18—	Deg. F.	18—	Deg. F.	18—	Deg. F.	18—	Deg. F.	18—
81.3	25	76.3	25	74.5	77	61.5	79	51.1	80	41.3	29	54.4	25
78.3	30	75.5	28	73.2	81	59.6	60, 61	45.6	70	41.1	38	54.0	28
78.4	22, 68	76.4	31	71.1	65	59.1	22	48.4	22	40.4	52, 91	54.0	30
78.3	76	76.2	77	71.0	23	58.7	30	48.2	46, 49	40.2	81	58.6	65, 88
77.3	72	76.0	45	70.2	84	58.6	78	46.7	81	39.3	48	53.5	78
69.5	37	67.9	36	60.7	35	45.9	36	38.2	23	22.2	31	47.2	36
70.8	84	68.6	37	62.6	37, 71	50.3	38	38.5	73	25.9	76	49.2	37, 75
71.4	88, 91	69.8	35	63.6	87	50.8	76	39.2	42	27.4	51	49.6	85
72.2	46, 71	70.4	24, 55	63.4	48	51.6	69	39.4	75	28.8	80	49.9	56, 68
72.3	40	70.6	33	63.8	52, 59	51.9	41	39.7	27	28.4	35	50.0	88

of 62 Years, 1830-1891.

76.2	63	73.7	76	71.4	81	58.0	79	46.7	49	36.5	89	49.8	78
74.3	56	73.0	54	66.4	65	54.7	31	46.6	30	36.2	81	49.3	30
74.3	78	72.3	81	66.0	91	54.1	39	42.7	46	36.1	77, 91	49.1	54
74.2	87	71.6	53	65.7	46, 74	54.0	82	42.3	53, 58	34.6	52	48.8	77, 80
74.1	38	71.4	77	65.0	84	58.6	71	42.2	50	34.4	48	48.7	46, 81, 91
65.4	84	62.5	66	56.2	48	41.4	36	27.0	73	16.2	31	43.8	85
65.5	45	63.3	36	56.3	60	43.5	38, 89	32.1	38	13.5	67	44.1	56
65.6	60	64.3	35	56.7	35, 71	44.1	88	33.0	39	19.7	76	44.2	75
66.3	41	65.5	39	57.0	71	44.5	41	33.1	71	20.5	72	44.5	88
66.3	42	65.8	69	57.2	63	45.1	69	33.7	75, 80	22.6	86	45.0	38

and Gouverneur, Record of 13 Years, 1861-1873.

74.2	68	70.4	45, 54	63.0	46	52.0	35	40.4	30	32.1	29	46.0	28
73.6	38	70.3	40	62.2	55, 65	49.7	39	39.8	46	28.8	43	45.8	46
73.0	40	69.0	33	60.4	41	49.5	54	38.9	26	28.4	47	45.7	48, 54
72.6	55	68.6	28, 47	60.3	34, 69	49.1	29	38.1	66	26.4	30, 73	45.4	39
71.3	47	67.6	67	59.7	54	48.2	53	38.0	47	26.1	43	44.7	30
63.3	33	60.5	38	51.4	71	36.9	36	25.1	73	11.7	72	40.8	36, 62
64.8	62	61.8	61	58.1	42	40.4	41	26.1	71	12.2	31	41.4	37, 61
64.4	61, 71	62.5	36	53.8	43	41.6	43	23.0	27	14.5	67	41.5	63
64.5	43	62.8	69	54.0	29, 35	41.7	65	30.0	43	14.7	35	42.0	67
65.9	29	63.8	73	54.2	68	41.8	68, 69	30.5	41	15.4	45	43.0	66

of 52 Years, 1840-1891.

76.7	87	72.5	40	66.0	91	54.7	79	43.3	49	34.8	91	48.5	91
74.0	68	71.6	30	65.4	81	53.3	82	41.3	46	34.7	81	47.6	89
73.2	78	70.5	41, 88, 91	65.2	84	52.7	78	40.4	50	31.8	89	47.5	78
72.7	49	70.4	45	65.0	89	51.1	45	40.0	89	30.8	52	46.2	77
72.5	70	70.1	42	64.7	46	50.6	51	39.3	47, 60, 77	30.0	48	46.1	84
63.8	60, 65	60.1	66	53.1	71	40.8	65	28.0	73	14.5	67	42.0	58
64.2	43	63.0	55	54.0	64	41.3	89	28.6	71	14.8	90	42.1	66
65.1	59	63.1	56	54.5	60	41.9	76	29.4	75, 80	16.9	76	42.3	67
65.5	87	70.4	69	54.8	63	42.2	69	31.6	89	17.3	54	42.4	56, 52
65.7	62	64.2	57	53.2	59	42.5	64	31.7	68	17.8	45	42.5	65

## AND ANNUAL TEMPERATURE.

11.8	8.9	12.5	15.6	12.9	19.1	7.2
10.8	11.2	15.2	16.6	19.7	20.3	6.0
10.9	9.9	11.6	15.1	15.8	20.4	5.2
12.9	12.4	12.9	13.9	15.3	20.3	6.5

records of these stations extending over the past 150 and 78 years, respectively.

## EXTREMES OF MONTHLY AND ANNUAL TEMPERATURE.

The accompanying table shows the warmest and coldest months and years which have occurred during a long period at four representative localities of the State.

At Fort Columbus, in New York Harbor, the observations of the entire series have presumably been made under conditions which would not cause discrepancies exceeding a degree in the mean values, so that the differences shown may be attributed to actual variations of weather. At Rochester the records were kept by voluntary observers prior to 1871, and at the Weather Bureau station thereafter; but the normal derived from the two series do not differ by so much as 2 degrees for any month, while the variation for the year is but 0.3 degrees. There is some local variation between the conditions at Potsdam and Gouverneur, and a small percentage of the differences shown in the table may be attributed to this fact. The record at Burlington, Vt., has been maintained without change of method or exposure of instruments for fifty-two years. The thermometers, although selected with care, were not standardized, and it seems probable that an increase in the mean values for the summer months observable during the latter part of the record may be due in part to instrumental error.

In cases where the extreme values did not depart very widely from the averages a considerable diversity was found even among adjacent stations as to the seasons of greatest heat and cold, and the best that could be done under these circumstances was to examine several records in each section of the State, selecting the dates in which there was substantial agreement. The values given for these dates are, however, those observed at the standard stations of the table, excepting in a few cases where these were found to be obviously in error, when the average was interpolated from adjacent stations.

It may be of interest to compare the *extreme* conditions in the vicinity of New York city with the *normal* temperature of quite different climates.

The *warmest* January at Fort Columbus=40 degrees.

The *average* " at Norfolk, Va.,=40 degrees.

The " " at Atlanta, Ga.,=43 degrees.

The *average* January at Jacksonville, Fla.,=55 degrees.  
 The “ “ at San Francisco, Cal.,=50 degrees.  
 The “ “ at Portland, Oregon,=38 degrees.  
 The “ “ at Paris, France,=36 degrees.  
 The “ “ at London, England,=38 degrees.  
 The *coldest* “ at Fort Columbus=20 degrees.  
 The *average* “ at Portland Me.,=20 degrees.  
 The “ “ at Chicago, Ill.,=25 degrees.  
 The “ “ at Milwaukee, Wis.,=19 degrees.  
 The “ “ at Spokane Falls, Wash.,=20 degrees.  
 The “ “ at Christiana, Norway,=23 degrees.  
 The “ “ at St. Petersburg, Russia,=16 degrees  
 The *warmest* July at Fort Columbus=81 degrees or 79 degrees.

The *average* July at Baltimore, Md.,=79 degrees.  
 The “ “ at Jacksonville, Fla.,=83 degrees.  
 The “ “ at St. Louis, Mo.,=79 degrees.  
 The “ “ at Alexandria, Egypt,=80 degrees.  
 The “ “ at Madrid, Spain,=76 degrees.  
 The “ “ at Rome, Italy,=77 degrees.

Notes descriptive of seasons of extreme heat and cold which have occurred in the vicinity of New York are given in section V.

#### DAILY FLUCTUATIONS OF TEMPERATURE.

The following average daily amplitudes or ranges of temperature are given by Mr. A. McAdie in his work on “Mean Temperatures and their Corrections in the United States.”

TABLE 7. DAILY AMPLITUDES OF TEMPERATURE.

	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Albany .....	Deg. 7.0	Deg. 8.0	Deg. 8.4	Deg. 12.2	Deg. 14.2	Deg. 18.6	Deg. 14.6	Deg. 14.4	Deg. 14.4	Deg. 11.2	Deg. 7.1	Deg. 5.5
New York city ....	6.8	7.5	9.5	11.0	11.2	11.5	11.0	10.2	10.0	9.8	8.2	6.7
Buffalo ..	3.8	4.8	5.8	7.9	9.0	8.1	8.0	10.3	9.9	7.3	5.4	3.7
Rochester .....	4.4	5.4	6.3	10.0	11.6	12.5	12.0	11.4	11.2	9.5	6.8	4.0

At each of the stations, with the exception of Albany, the daily amplitude is decreased by proximity to the Great Lakes or the ocean; the effect being most marked at Buffalo, where the prevailing winds come from the lake. The large percentage of cloudy weather which obtains in the Lake Region also tends to reduce the values at both Buffalo and Rochester, while New York city is less affected by this cause. The absence of large bodies of water near Albany, its position on the lower slopes of a broad valley, and a lesser degree of cloudiness than obtains in the Lake Region combine to make its range larger than at the three remaining stations.

But one determination of amplitude has been made for this State in addition to the above. This is for the station Mohawk, situated in the deeper portion of the Mohawk valley, and hence representing conditions somewhat different from those at any of the Weather Bureau stations. The amplitudes, as given by Schott, are:

Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Deg. 7.2	Deg. 9.3	Deg. 10.5	Deg. 13.7	Deg. 16.1	Deg. 18.0	Deg. 15.1	Deg. 15.8	Deg. 14.9	Deg. 11.0	Deg. 6.5	Deg. 6.

The cloudiness is at a decided maximum in winter at Mohawk, and hence the range does not then differ greatly from that of Albany. The larger range which obtains in summer is such as would be expected to result from the rapid heating of the quiet air of the valley during the day, alternating with a downflow of chilled air from the highlands at night.

As shown by McAdie's tables, the time of the maximum temperature at the Weather Bureau Stations does not vary substantially from 3 P. M. during the year. At Mohawk the maximum occurs, by the tables, at 4 P. M. during April, May and June, and varies but little from 3 P. M. during the remainder of the year. For the State generally, the *minimum* temperature may be expected to occur at about the time of sunrise during the summer, and from one to two hours before sunrise in winter. At Mohawk, however, the lowest temperature is not reached until the time of sunrise in winter, owing to the later hour at which the rays of the sun penetrate into the valley.

Observations have recently been made within this State at a few stations located on hill or mountain tops, whose results as regards daily amplitude of temperature it would be of interest to compare with the foregoing. The records do not, however, much exceed a year in length, and hence can not give even approximately correct values of daily variations. The *mean daily ranges* are given herewith (page 388) for three of these stations, in connection with the values for the same months at points in adjacent valleys. These ranges are not, like the above, freed from the effects of unperiodic variations from day to day, and hence are much in excess of the true amplitudes, the excess, however, being approximately the same for the stations of each pair.



TABLE 8.  
MEAN DAILY RANGES AT HILL AND VALLEY STATIONS.

STATIONS.	Altitude	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
	Feet.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.
Italy Hill .....	2,080	11.7	14.7	14.9	18.0	20.6	21.9	19.4	19.3	17.7	17.7	14.9	.....
South Canisteo .....	1,340	17.0	17.0	18.4	23.3	30.7	29.4	25.7	24.5	26.3	23.5	19.3	.....
Differences .....	740	5.3	2.3	3.5	5.3	10.1	8.5	6.3	5.2	8.6	5.8	4.4	.....
Lyon Mountain .....	1,917	13.9	18.5	14.2	15.0	18.3	15.6	14.8	14.7	15.7	13.6	13.6	14.1
Plattsburgh ....	150	17.9	19.5	17.5	19.1	21.7	20.1	17.2	16.0	19.0	16.1	14.8	15.0
Differences .....	1,767	4.0	1.0	3.3	4.1	3.4	4.5	2.4	1.3	3.3	2.5	1.2	0.9
Minnewaska .....	1,800	12.2	13.4	15.7	17.8	21.1	21.3	15.1	13.8	13.4	16.1	18.7	19.1
Honeymead Brook .....	425	16.2	16.1	15.8	23.8	24.5	21.7	21.2	19.0	18.2	18.3	18.4	17.4
Differences .....	1,375	4.0	2.7	0.1	6.0	3.4	0.4	6.1	5.7	4.8	2.2	-0.3	-1.7

The effect of the elevated position and open exposure of the hill tops in decreasing the daily range is here apparent.

For comparison with the above the following mean daily ranges at stations of the National Service are given, the means embracing the five year period, 1881-1885.

STATIONS.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Albany .....	15.8	16.1	13.9	16.8	17.5	17.9	16.7	16.7	16.3	16.2	13.1	12.9
Block Island.....	13.9	12.8	11.9	11.8	11.2	11.7	11.5	10.1	10.1	11.0	11.3	12.4

It will be seen that at Block Island the mean daily range owes its principal component to the irregular temperature changes which takes place from day to day, since the range is at its maximum during the months of greatest temperature variability, when, on the other hand, the small amplitude proper is at its minimum.

The fact that the instrument shelters at National Weather Bureau stations are located at a considerable distance from the ground (the average height in this State being over 100 feet) may in part explain the lesser range at these stations as compared with some of the values obtained by the State Bureau.

#### VALLEY WINDS AND INVERSIONS OF TEMPERATURE.

During clear nights, both in winter and summer, the ground loses heat rapidly by radiation, and the air in contact with it, becoming cool and dense, flows down the slopes towards the lower levels of the valleys. In central Europe this phenomenon appears to be most noticeable in winter, being greatly strengthened by the intense anticyclonic conditions which often occur during that season; while in New York the rapid radiation which is necessary to the process is usually checked by clouded skies during the colder part of the year.

At Ithaca, in the Central Lake Region, the night wind usually commences from one to two hours after sunset, blowing from the south down the channels of the two principal streams flowing into Cayuga Lake. At first a light breeze, it increases in force

during the night, and attains a maximum velocity probably not less than eight miles per hour. The current in the main valley at the head of the lake (as observed by means of small balloons) is from 50 to 100 feet in depth before midnight, and no doubt becomes greater before morning. This volume of cold air gradually increases until sufficient to overcome the heating effect of the lake waters, reaching the northern extremity of the valley toward morning.

The essential features of the night wind, as thus outlined, are common to all highland districts, although the contour of the land surfaces near Ithaca (and also the presence of the lake) give it rather unusual strength. As an additional instance, the case of Utica may be mentioned; the phenomenon being there more marked than would at first be expected from the character of the surrounding country. The relief map accompanying this report shows the valley to open both eastward and westward from Utica; the highlands, however, rising mainly towards the north-east and southeast of the city. The following observations upon the winds during the winters and summers of two years were found in the report of the Board of Regents (second series).

DIRECTION OF SEASONAL WINDS.	HOURS AND NUMBER OF OBSERVATIONS.		
	6 A. M.	2 P. M.	10 P. M.
In summer:			
Number of observations of easterly winds.....	116	44	47
Number of observations of westerly winds.....	93	160	59
In winter:			
Number of observations of easterly winds.....	97	93	77
Number of observations of westerly winds.....	81	127	108

The prevailing westerly winds at midday, while mainly due to the general atmospheric circulation, must be considerably strengthened by the updraught of air on the heated hill slopes. At night, when the motion of the upper currents is no longer imparted to the surface air by convectional action, the downflow from the hills proceeds unchecked; but, owing to the distance

of the city from the highlands, the easterly wind does not become fully established there until after the evening observation and is much more apparent in the early morning. The large percentage of cloudiness in winter evidently tends to decrease the frequency of easterly winds at that season.

The valley winds have a considerable climatic importance, since they bring a cool and refreshing air at night which is not felt on the plains or upper hill slopes. Also, in the autumn and winter the same condition gives earlier frosts and lower nocturnal temperatures in the valleys than obtain on the hills or plains, as long as the skies remain clear.

The following temperature readings were obtained at hill and valley stations of Central New York during the clear weather accompanying anticyclonic conditions in January and February, 1892:

LOCATION.	Altitude. Feet.	TEMPERATURE (FAHRENHEIT).														
		JANUARY 9.			JANUARY 10.			JANUARY 20.			JANUARY 21.			FEBRUARY 6.		
		Max.	Min.	Range.	Max.	Min.	Range.	Max.	Min.	Range.	Max.	Min.	Range.	Max.	Min.	Range.
Oxford (Hill).....	1,250	21	4	17	17	-8	25	11	-24	35	21	-10	31	22	-8	30
Brookfield (Val.)..	1,350	24	-3	27	17	-16	33	6	-28	34	21	-17	38	30	-16	46

NOTE.—The rapid rise of the general surface of the eastern plateau brings the valley bottom at Brookfield above the level of Oxford. The distance between the stations is about thirty miles.

The inversion of temperature which occurred in Northern New York on December 8th, 1891, has already been described (page 53). In that case there was apparently a cold stratum of surface air and a slight increase of temperature with vertical height within the mass of the anticyclone itself. Such a condition must be less likely to occur south of Lake Ontario, as the surface air for the time being loses its intense cold in passing over the water.

TABLE 9. — RECORDS OF MAXIMUM

YEAR.	ATLANTIC COAST.						HUDSON VALLEY.				EASTERN PLATEAU.				CENTRAL LAKES.		WESTERN PLATEAU.	
	Fort Colum- bus.		Central Park, New York.		New York City.		Bangall or Hon- eymead Brook.		Albany.		Pom- pey.		Hamil- ton.*		Ithaca.		Hum- phrey.	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
1820									100	5								
1821									98	14								
1822	100	-1							90	-14								
1823	91	3							94	-6								
1824	96	2							89	3								
1825	104	-3							98	6								
1826	97	-1							93	-12								
1827	96	0							91	-18	90	-13	96	-20	96	-2		
1828	99	9							96	2	90	-1	95	-20	96	8		
1829	95	7							92	10	88	-11	93	-20				
1830	98	5							97	-12	90	-11	95	-20	96	-1		
1831	89	8							94	10	85	5	96	-23				
1832	97	1							91	-11	87	-16						
1833	94	8							91	-10	84	-9	94	-24	98	-4		
1834	94	6							96	8			93	-14				
1835	89	-1							89	-23	85	-18	92	-14	96	-12		
1836	89	0							93	-16	87	-16	94	-28	94	-13		
1837	86	10							90	-12	86	-10			92	-10		
1838	94	13							96	6	91	-12			95	-8		
1839	96	6							93	-1	89	-13			91	-12		
1840	90	2							96	-23	89	-13	90	-25	98	-14		
1841	92	9							96	-12	90	5						
1842	85	16							91	5	89	-9	88	-16	90	2		
1843	98	9							93	-14	88	-8	96	-15	94	-6		
1844	92	3							86	-12			90	-15	94	-1		
1845	99	6							97	-11			92	-13	97	-4		
1846	95	5							97	-11			93	-16	99	-7		
1847	94	12							90	6			92	-12	99	7		
1848	91	3							93	-15			93	-21	94	-4		
1849	94	0							93	-10			94	-18				
1850	94	9							91	-10								
1851	98	4							90	9								
1852	93	-2							93	7					95	-1		
1853	96	9							91	-1								
1854	93	5							94	-15								
1855	92	-6							94	-2								
1856	95	-6							96	9								
1857	91	-5							92	-19								
1858	93	8							96	3								
1859	92	-3																
1860	91	0							85	-14								
1861	91	-7																
1862	91	9																
1863	93	3																
1864	99	4																
1865	91	3																
1866		-12																
1867	89	5																
1868	92	-1																
1869	92	8																
1870	96	10	94	9														
1871	87	-3	92	-2	91	-1												
1872	97	3	95	3	94	2												
1873	95	-2	94	-1	94	-4												
1874	98	1	98	3	93	4			92	-16								
1875	92	-5	93	-3	95	-6			90	-18								
1876	102	5	98	3	99	-2			93	-5								
1877	97	9	92	10	93	6			92	-7								
1878	98	7	94	7	94	9			92	-18								
1879	97	-2	93	-4	94	-3			91	-8								
1880	95	-5	96	-6	94	-6			92	-10								
1881	95	3	101	-3	100	1			92	-10								
1882	95	-3	93	-6	93	-1			92	-14								
1883	90	3	95	-1	90	4			94	-8								
1884	92	-3	91	-3	92	1	95	-13	92	-16								
1885	95	0	99	-2	96	0	91	-19	97	-10								
1886	90	-3	94	-4	90	-2	97	-8	97	-11								
1887	95	5	96	4	94	6	93	-18	95	-15								
1888	94	0	96	0	96	2	96	-14	92	-10								
1889	91	1	91	3	90	2	92	-4	92	-5								
1890	91	8	98	7	95	6	92	-7	93	-4								
1891	97	10	98	9	94	9	92	0	95	-5								
Means	91	3	95	1	94	1	94	-10	98	11	88	-11	93	-20	94	+11	90	-11
Extremes	104	-12	101	-6	100	-6	97	-19	98	18	91	-18	96	-34	96	+20	95	-34

\* In the town of Hamilton, Madison Co., to be distinguished from the station Hamilton College of and extremes derived from second series, 1860-1873. † Means and extremes derived from second following were obtained from self-registering instruments, and under standard conditions. B Bc

# STATE METEOROLOGICAL BUREAU.

393

## AND MINIMUM TEMPERATURES.

GREAT LAKES.										ST. LAWRENCE VALLEY.				CHAMPLAIN VALLEY.					
Erie, Pa.		Buffalo.		Rochester.		Oswego.		Pierrepont Manor.		Madison Barracks.		Gouverneur.		Potsdam.		Plattsburgh Barracks.		Burlington, Vermont.	
Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
				98	5									95	13				
					2									90	27				
				91	6									93	23				
				93	2									98	20				
				89	6									90	27				
				90	8									98	23				
				91	4									93	27				
				99	1									90	30				
				98	2									96	24				
				94	3									98	17				
				96	3									94	16				
				91	5									100	24	91	20	85	16
				92	6									95	23	90	12	89	14
				89	2									94	28	85	28	87	18
				102	0									99	30	94	20	93	16
				96	1									98	32	94	22	94	17
				95	8										32	95	13	88	14
				94	0									96	38	92	27	90	17
				95	9			B.	B.							98	20	88	14
				94	1			93	12							94	14	87	20
								97	18							95	18	93	18
								96								92	21	88	12
								97										87	8
								98	32					97	36			90	24
								98	32					90	44			93	16
				96	6	92	11	95	23									89	26
				91	13	98	18	92	30									95	19
				94	2			89	11									90	30
				94	10	86	18	88	27									88	27
				93	4			92	23									88	18
				93	14	87	13	92	8	87	21			37	20			96	12
				91	2	84	14	90	20	93	34	91	24	90	22			94	10
				94	4	90	19	94	24	92	34	95	27	91	25			88	27
				92	2	86	11	92	15	89	40	92	29	90	28			94	18
				96	10	88	15	91	29	88	30	90	28	88	25			88	18
				91	1	90	10	91	18	88	32	88	28	88	26			91	25
				89	8	90	8	94	26			82	3	82	13			92	13
				86	5	82	4	83	21			82	8	89	20			96	14
				92	6	85	1	89	13			92	18	90	20			86	18
						90	12	87	30			88	40					90	18

the general tables.

+ Means and extremes derived from second series, 1879-1891.

series, 1874-1891.

ords from self-registering instruments.

+ Means

A Records

## MAXIMUM AND MINIMUM TEMPERATURE.

Table 9 presents the statistics of temperature during long periods at several points representing the prominent climatic region of New York, and also exhibits the highest and lowest values which have been recorded in the State.

The accuracy of the maximum temperatures (excepting as marked with the reference A) can not be vouched for, especially as regards the records kept prior to the establishment of Signal Service standards and methods in 1870. Maxima of 100 degrees or more within this State are to be accepted with caution. Even in cases where the values appear to be systematically too high, however, they may give relative results of value when compared with others of the same series.

While a slight defect in the exposure of the thermometer may cause too high a maximum reading, the minimum reading is not likely to be too low excepting as the result of defects in the scale of the instrument; and hence the minimum values given in the table are subject to less error than the maxima. The lowest value (-46 degrees) does not appear improbable, in view of the minimum of -35 degrees obtained under standard conditions in 1889. Mercury is several times reported to have been frozen at points not usually so subject to extreme cold as the station in question. (See page 436.) The lowest temperatures in New York have thus far been obtained near the upper limit of the St. Lawrence valley, between the north eastern shore of Lake Ontario and the Adirondack highlands.

In table 10 will be found the maxima and minima observed at a large number of stations provided with the standard thermometers of the National and State Weather Bureaus. Although the observations extend over only four years, the results are valuable for purposes of comparison. The maxima in a few cases appear to be affected by an imperfect exposure of the thermometers.

TABLE 10.  
MAXIMUM AND MINIMUM TEMPERATURES DURING FOUR YEARS, 1889-1892.

STATIONS.	Counties.	1889.		1890.		1891.		1892.*		Elevation above tide	Situation of station.	REMARKS.
		Max.	Min.	Max.	Min.	Max.	Min.					
<i>Western Plateau.</i>												
Alfred Centre.....	Allegany.....	.....	.....	90	-6	88	-10	92	-9	<i>Feet.</i> 1,824	Valley.	
Angellia.....	Allegany.....	59	-22	91	-14	.....	-14	93	-22	1,840	Valley.	
Humphrey.....	Cattaraugus.....	89	-16	92	.....	92	-1	90	-8	1,960	Hill.	
Mt. Morris.....	Livingston.....	.....	.....	.....	.....	93	0	95	-11	625	Valley.	
Lockport.....	Niagara.....	.....	.....	93	.....	93	0	92	-3	616	Plain.	
Wedgewood.....	Schuyler.....	83	-12	97	1	.....	.....	96	-6	1,350	Hill.	
Addison.....	Steuben.....	.....	.....	.....	.....	95	0	94	-14	1,000	Slope.	
South Canisteo.....	Steuben.....	90	-12	93	-7	92	-10	93	-14	1,480	Valley.	
Arcade.....	Wyoming.....	.....	.....	.....	.....	86	-9	89	-18	1,557	Slope.	
Italy Hill.....	Yates.....	.....	.....	.....	.....	90	1	.....	.....	2,080	Hill.	
<i>Eastern Plateau.</i>												
Binghamton.....	Broome.....	.....	.....	.....	.....	93	-4	94	-17	870	Valley.	
Oxford.....	Chenango.....	.....	.....	89	-14	90	8	88	-24	1,250	Hill.	
South Kortright.....	Delaware.....	.....	-14	93	-30	92	-14	94	-12	1,700	Valley.	
Brookfield.....	Madison.....	.....	.....	94	-15	91	-15	95	-28	1,350	Valley.	
Port Jervis.....	Orange.....	.....	.....	92	-1	94	1	94	-4	470	Valley.	
Cooperstown.....	Otsego.....	86	-15	88	-15	87	-2	90	-18	1,800	Valley, near lake.	
Quaker Street.....	Schenectady.....	.....	.....	90	-7	90	-6	93	-12	973	Hill.	
Perry City.....	Schuyler.....	91	-14	97	-8	93	-9	94	-15	1,088	Valley.	
Middleburgh.....	Schoharie.....	94	-22	96	-11	.....	.....	.....	.....	640	Valley.	
Waverly.....	Tioga.....	89	-13	93	-15	95	-2	97	-19	825	Valley.	
Minnewaska.....	Ulster.....	94	-22	.....	.....	95	-2	93	-11	1,800	Hill.	
<i>Northern Plateau.</i>												
Constableville.....	Lewis.....	89	-25	89	-14	89	-18	.....	-24	1,246	Slope.	
Number Four.....	Lewis.....	83	-27	87	-17	86	-19	.....	-23	1,571	Hill.	
Turin.....	Lewis.....	.....	.....	.....	.....	87	-16	86	-17	1,240	Slope.	
Keene Valley.....	Essex.....	.....	.....	.....	-17	.....	-12	.....	.....	1,015	Valley.	
Lyon Mountain.....	Franklin.....	.....	.....	.....	.....	85	-15	.....	-9	1,917	Slope.	
Saranac Lake.....	Franklin.....	.....	-34	.....	.....	.....	.....	.....	.....	1,540	Valley, near lake.	
<i>Coast Region.</i>												
New York City.....	New York.....	90	2	95	6	94	9	96	8	164	Plain.	
Setauket.....	Suffolk.....	88	-5	91	8	93	12	94	6	40	Hill near L. I. Sound.	
Block Island, R. I.....	.....	81	2	85	10	85	9	88	3	27		



## MAXIMUM AND MINIMUM TEMPERATURES DURING FOUR YEARS, 1889-1899 — (Concluded).

STATIONS.	Counties.	1889.		1890.		1891.		1892.*		REMARKS.	
		Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Elevation above tide.	Situation of station.
										Feet.	
<i>Hudson Valley.</i>											
Albany.....	Albany.....	92	-5	98	-4	95	-5	96	-5	85	Valley.
Bangor or Honeynead Brook.....	Dutchess.....	92	-4	92	.....	93	.....	92	-4	425	Slope.
Poughkeepsie.....	Dutchess.....	.....	.....	.....	.....	89	-7	94	-11	180	Slope.
Cornell.....	Fulton.....	.....	.....	.....	.....	97	1	93	0	500	Valley.
<i>Mohawk Valley.</i>											
Utica.....	Oneida.....	100	-23	95	-10	92	-3	93	-95	537	Valley.
Ilion.....	Herkimer.....	93	-30	.....	.....	.....	.....	.....	.....	480	Valley.
<i>Champlain Valley.</i>											
Plattsburgh.....	Clinton.....	.....	.....	92	-12	91	-2	98	-10	150	Valley, near lake.
Burlington, Vt.....	Chittenden.....	89	-15	91	-12	94	-5	.....	.....	.....	Hill, near lake.
<i>St. Lawrence Valley.</i>											
Malone.....	Franklin.....	.....	.....	.....	.....	89	-11	87	-13	810	Hill.
Madison Barracks.....	Jefferson.....	92	-35	100	-19	92	-11	.....	-31	524	Valley, near lake.
Canton.....	St. Lawrence.....	92	-35	95	-15	93	-15	.....	-31	304	Plain.
North Hammond.....	St. Lawrence.....	94	-22	.....	.....	.....	.....	94	.....	340	Plain.
Potsdam.....	St. Lawrence.....	90	-36	93	.....	.....	-15	.....	.....	300	Plain.
<i>Great Lakes.</i>											
Buffalo.....	Erie.....	89	-10	89	7	90	4	84	-3	690	Plain, near lake.
Rochester.....	Monroe.....	92	-9	95	-6	94	6	91	-3	931	Plain.
Hess Roads Station.....	Niagara.....	91	-9	97	3	90	0	93	0	930	Plain.
Baldwinsville.....	Onondaga.....	.....	.....	.....	.....	96	0	99	-17	390	Plain.
Oswego.....	Oswego.....	90	-5	93	0	90	1	91	-3	394	Slope, near lake.
Palermo.....	Oswego.....	89	-9	94	6	96	-6	95	-18	450	Slope.
Lyons.....	Wayne.....	92	-3	93	5	93	0	92	0	497	Slope.
Erie, Pa.....	Erie.....	.....	.....	94	3	89	0	90	2	651	.....
<i>Central Lakes.</i>											
Fleming.....	Cayuga.....	93	-4	96	3	94	0	92	-5	1,000	Plain.
Geneva.....	Ontario.....	92	-12	96	0	93	3	97	-3	459	Slope.
Utica.....	Tompkins.....	92	-13	96	-3	93	-3	97	-6	840	Slope.

\* Minimum for January and February only.

An unbroken record of temperature has been kept at Coopers-town, N. Y., since 1842; a standard thermometer favorably exposed being used after 1853. Mr. G. Pomeroy Keese, the observer, gives, as the highest temperature of the entire period, 96 degrees on July 3, 1868, and as the lowest, -30 degrees on February 7, 1855, and January 24, 1857.

#### VARIABILITY OF TEMPERATURE.

This important climatic element may be measured by the average difference which obtains between the mean temperature of successive days, a method which eliminates the nearly constant diurnal variation. General A. W. Greeley gives in "American Weather" the values thus derived for representative stations in New York and other States during January, the month which in most cases has the maximum variability :

TABLE 11. VARIABILITY OF TEMPERATURE.

For the Great Lake Region the mean variability in January is 7.4 degrees.

For the eastern central section the mean variability in January is 7.6 degrees.

For the Atlantic coast region the mean variability in January is 6.5 degrees.

During the same month the variability on the coast of California is 2 degrees; on the south Atlantic and Gulf coasts 6 degrees; in the central states of the Mississippi valley from 8 degrees to 9 degrees; and in the region of the upper Missouri valley from 9 degrees to 10 degrees. The greatest variability which has been found within the United States is 11 degrees at Portland, Me.

The following table exhibits the variability of temperature in various parts of the State in a somewhat different manner from the above :

TABLE 12. DIFFERENCES BETWEEN THE MEAN TEMPERATURES OF CONSECUTIVE DAYS FOR AN AVERAGE WINTER MONTH.

STATION AND SECTION OF STATE.	DEGREES DIFFERENCE BETWEEN CONSECUTIVE DAYS.				
	Degrees. 5-10	Degrees. 10-15	Degrees. 15-20	Degrees. 20-25	Degrees. Over 25
	Number of times of occurrence per month.				
Canton (St. Lawrence Valley).....	7.0	6.0	4.0	2.0	2.5
Hess Roads (Great Lakes).....	11.0	5.0	2.5	0.5	0
Honeymead Brook (Lower Hudson Valley).....	8.0	4.5	3.5	1.5	0
Setauket ( Long Island ).....	10.0	6.0	2.0	0.5	0.2

These values are derived from a total of nine winter months observations at each station. A longer series might be expected to modify the averages somewhat, while changing the relative values but little. The mean values were, in each case, computed from tri-daily observations.

The most obvious feature shown here is the excess of large ranges in the St. Lawrence valley as compared with the remainder of the State. The tempering effect of the Great Lakes is lacking in that region; and moreover, there appears to be a general increase of variability in the direction of the Eastern Canadian Provinces.

A graphic representation of the variability of temperature in New York will be found in plate 1.

TABLE 13.  
FROSTS.

STATION.	County.	Authority.	Period, years.	LAST KILLING FROST OF SPRING.			FIRST KILLING FROST OF AUTUMN.		
				Average date.	Earliest date.	Latest date.	Average date.	Earliest date.	Latest date.
<i>Western Plateau.</i> Humphrey .....	Cattaraugus.....	C. E. Whitney .....	10	June 24	May 28	July 26	Sept. 24	Sept. 11	Oct. 7
<i>Eastern Plateau.</i> Coopers town.....	Oswego .....	Weather Review, 1888 .....	30	.....	.....	.....	Sept. 27	Sept. 3	Oct. 22
Waverly or Factoryville .....	Tioga.....	Weather Review, 1888.....	20	.....	.....	.....	Oct. 7	Aug. 24	Oct. 30
<i>Coast Region.</i> New York City .....	New York .....	Signal Office Reports.....	18	April 13	March 15	May 27	Nov. 5	Oct. 7	Nov. 23
<i>Hudson Valley.</i> Albany .....	Albany .....	Signal Office Reports.....	18	April 13	.....	.....	Oct. 23	Sept. 26	Nov. 21
<i>St. Lawrence Valley.</i> North Hammond.....	St. Lawrence.....	C. A. Wooster.....	14	.....	.....	.....	Oct. 10	Sept. 1	Nov. 13
<i>Great Lakes.</i> Oswego.....	Oswego.....	Signal Office Reports.....	18	April 24	March 26	May 27	Oct. 15	Aug. 28	Nov. 5
Falermo* .....	Falermo.....	A. E. Bardet.....	33	May 6	.....	.....	Oct. 12	Sept. 21	Nov. 1
Rochester .....	Monroe.....	Signal Office Reports .....	18	May 30	April 11	May 27	Oct. 15	Sept. 23	Nov. 4
Buffalo .....	Buffalo .....	Signal Office Reports .....	18	April 23	March 30	May 7	Oct. 30	Sept. 5	Nov. 12
Erie, Pa. ....	Erie .....	Signal Office Reports .....	18	April 23	March 30	May 7	Oct. 30	Sept. 5	Nov. 12
Amherst, Mass. ....	.....	U. S. Weather Review, 1888 .....	47	.....	.....	.....	Sept. 30	Aug. 10	Oct. 8
Middletown, Conn. ....	.....	U. S. Weather Review, 1888 .....	39	.....	.....	.....	Oct. 2	Sept. 23	Oct. 22
Dyberry, Penn. ....	.....	U. S. Weather Review, 1888 .....	36	.....	.....	.....	Sept. 23	Aug. 30	Oct. 21

\* The date September nineteenth given in the U. S. Weather Review, 1888, is that of first light frost. Date of first killing frost newly computed.

TABLE 14.  
DATES OF FROSTS AS GIVEN IN REGENTS REPORTS.

STATION.	County.	Period years.	FIRST KILLING FROST OF AUTUMN.		
			Average date.	Earliest date.	Latest date.
<i>Western Plateau.</i>					
Dale or Middlebury ...	Wyoming .....	17	September 23	August 27	October 15
Prattsburg .....	Steuben .....	10	September 26	September 9	October 16
<i>Eastern Plateau.</i>					
Goshen .....	Orange .....	9	October 4	September 2	October 12
Montgomery .....	Orange .....	8	September 24	August 30	November 2
Hartwick .....	Otsego .....	13	September 22	August 3	October 21
Cherry Valley .....	Otsego .....	12	September 17	August 20	October 7
Oxford .....	Cheango .....	16	September 15	September 3	September 30
Cazenovia .....	Madison .....	19	September 13	August 3	October 3
Hamilton .....	Madison .....	15	September 11	August 2	October 13
Pompey .....	Onondaga .....	15	September 20	September 3	October 15
Onondaga .....	Onondaga .....	15	September 21	September 3	October 19
Homer .....	Cortland .....	17	September 29	August 3	October 16
<i>Northern Plateau.</i>					
Johnstown .....	Fulton .....	13	September 13	September 2	October 12
Fairfield .....	Herkimer .....	18	September 13	August 23	October 12
Lowville .....	Lewis .....	17	September 16	.....	.....
<i>Coast Region.</i>					
East Hampton .....	Suffolk .....	15	October 20	September 28	November 27
Flatbush .....	Kings .....	24	October 4	September 13	October 26
Jamaica .....	Kings .....	24	September 23	September 2	October 21
Mt. Pleasant .....	Westchester ..	9	September 28	August 3	November 3
North Salem .....	Westchester ..	19	September 19	August 3	October 11
<i>Hudson Valley.</i>					
Newburgh .....	Orange .....	15	October 9	September 23	October 23
Kingston .....	Ulster .....	15	September 28	September 9	October 17
Poughkeepsie .....	Dutchess .....	14	October 1	September 10	October 16
Hudson .....	Columbia .....	17	October 6	September 10	October 20
Kinderhook .....	Columbia .....	16	September 22	September 1	October 9
Albany .....	Albany .....	19	October 9	September 9	October 26
Cambridge .....	Washington ..	8	September 27	August 24	October 13
Salem .....	Washington ..	9	September 21	September 3	October 1
Granville .....	Washington ..	12	September 27	September 12	October 26
<i>St. Lawrence Valley.</i>					
Potsdam .....	St. Lawrence ..	22	September 7	August 4	October 7
Gouverneur .....	St. Lawrence ..	12	September 16	August 24	October 1
<i>Great Lakes.</i>					
Auburn .....	Cayuga .....	20	September 30	August 4	October 26
Rochester .....	Monroe .....	18	September 28	September 11	October 24
Lewiston .....	Niagara .....	27	September 25	August 3	October 11
Fredonia .....	Chautauqua ..	16	September 29	August 28	October 25

## FROSTS.

Table 13 exhibits the average and extreme dates of the last killing frost of spring and the first of autumn at nine places in New York and at Erie, Pa. The date for Palermo,\* Humphrey and North Hammond were furnished by Messrs. E. B. Bartlett,

\* It may be noted that dates given for Palermo, in the U. S. Weather Review for 1888 are those of the first light frost of autumn. The error is here corrected by means of a second series of observations kindly forwarded by Mr. Bartlett.

C. E. Whitney and C. A. Wooster, and for the remaining localities were derived from the reports of the Signal Service. Some data hitherto published have not been included in the table, owing to uncertainty as to the severity of the frosts reported.

The dates of table 14 have been computed from the observations of frosts which were obtained under the first portion of the New York Regents' system (1826-1850). No information could be obtained by the writer as to the severity of the frosts reported; but, from the evidence of the records themselves, it appears probable that both light and killing frosts were included in many cases. The results have a value, however, in fixing the *earliest* average date on which killing frosts may have occurred during the periods which they represent.

Efforts to obtain records of frosts from numerous additional points in the State were mainly unsuccessful; but several of the persons applied to kindly forwarded general information which may properly be included here.

*The Hudson Valley.*—Dr. James Hyatt of Honeymead Brook, central Dutchess County, states that "injurious cold waves and late spring frosts likely to damage fruits and crops are those which for the most part, in this locality, come in May. In April a cold wave or frost is not liable to do so serious injury. June frosts are extremely rare and August frosts perhaps equally so. In 1816 there were frosts every month in the year. The crops of Indian corn were all destroyed, and seed for the next year's planting had to be brought from a great distance. \* \* \* Serious damage here is unlikely before September 15th, while after October 1st frosts are generally harmless since the crops are secured before that date. During the past nine years we have had several injurious or killing spring frosts, but no autumnal ones of a disastrous nature." It is stated that a very unusually late and injurious spring frost occurred on May 30th, 1884.

Mr. H. C. Townsend of Wappingers Falls, Dutchess County, furnishes a list of killing frosts during seven years, 1886-1892. The average date of the last killing frost of spring was May 9th, the earliest date being April 30th and the latest May 20th. The average date of the first killing frost of autumn was October 12th, being three days earlier than at Palermo for the same

period. The earliest date of the record is September 7th and the latest October 25th. These frosts were observed in the valley of Wappingers Creek and are probably earlier than the average of the region.

Immediate proximity to the river moderates the severity of frosts considerably, according to the observations of Mr. H. A. Stone of Rondout.

#### THE CENTRAL LAKE REGION.

In the absence of adequate observations upon frosts the following dates of beginning and ending of freezing weather at Ithaca may be found useful. During the past fourteen years the last freezing temperature (32 degrees) of spring has, on an average, occurred on May 6th, the earliest date for the period being April 9th and the latest May 29th. The *average* date of first freezing temperature in autumn was October 10th; the earliest occurrence being September 26th, while in one case 32 degrees was not recorded until October 31st. Temperatures of 32 degrees in October or even the later part of September are not likely to be injurious to crops then exposed, while considerably higher *air* temperatures in May do not preclude the possibility of great refrigeration and disastrous frost near the surface of the ground or in valley bottoms. Dr. J. Hyatt, previously quoted, notes cases in which injurious frosts occurred late in May while the temperature registered 40 and 41 degrees at a point 12 to 20 feet above the general level.

Data from the grape region of Keuka Lake were furnished by Mr. H. O. Fairchild. From 1880 to 1892 May frosts damaged grapes somewhat in four cases, in three of which the injury was confined mainly to the valleys. The earliest instance of a killing autumnal frost was on September 22nd, and in three years some damage was sustained on October 11th and 12th. The only case of October frost in addition to these occurred on the 27th. Mr. Fairchild states that a temperature of 28 degrees is usually injurious only to the foliage of grape vines.

*The Great Lake Region* is very fairly represented in table 13 by five stations well distributed over the region. It will be seen that the conditions are here very favorable as regards the occur-

rence of frost, and especially so in the section of the Chautauqua grape belt represented approximately by the record of Erie, Pa. The following information concerning this region is given by Mr. S. S. Crissey of Fredonia.

"The first killing frost of autumn for the past twenty-five years has not occurred until the last week in October or after October 25th. The one notable exception was the autumn of 1891, when it occurred on October 12th. In several years it has not occurred until in November. I now speak of a frost or *freeze* of sufficient severity to injure ripe grapes exposed on the vines. I have had a Concord vineyard in bearing since 1869, and have never (until last year) had a pound injured in autumn."

"As to the danger from spring frosts: The vine begins to leaf out here May 10th, and we rarely have a severe frost after that time. I have never suffered in my locality, which has a high airy exposure; but some vineyards unfavorably located were injured in 1889 and 1891 by frosts about May 17th. Where lands lie facing the lake or with a northern slope they rarely, or almost never, suffer from frosts after May 15th. Of course, frosts before May 10th would do no injury." \* \* \*

"The most serious injury to vineyards in this section during the past twenty five years occurred in two cases when winter came on with the ground in unusually dry condition, giving a 'dry freeze.' \* \* \* To guard against this condition, which occurs about one year in ten, vineyardists in the dryer localities have abandoned fall plowing of their ground."

Mr. J. Ryckman of Brockton furnishes statements substantially similar to the above, adding that the total extent of grape vineyards in the Chautauqua belt is now about 30,000 acres.

*The Central Plateau.*—The early dates of frosts at Coopers-town and Humphrey, as compared with those of other stations of the table, are explained by the high elevation of the general land surface in their vicinity, which is also intersected by deep valleys very favorable to the occurrence of low nocturnal temperatures, and hence the dates at these stations may be considered to represent nearly, or quite, the earliest occurrence of frost in the central plateau region. Waverly, on the other hand, is situated in a very broad depression where, as has already been seen, the effect of nocturnal cooling is much less marked.



Mr. A. K. Harrison of New Lebanon, in N. E. Columbia County, states: "We often have frosts in August, and a few years ago (in 1889 or 1890) there was frost during every month excepting July." The data furnished, although not sufficient to establish an average, makes it apparent that frosts occur earlier in the eastern highlands than in the main portion of the Central Plateau.

*Northern New York.*—In commenting on the dates of autumnal frosts at North Hammond, in the St. Lawrence valley, Mr. C. A. Wooster states that their late occurrence (as given in the table), is in part due to close proximity to the St. Lawrence River, two miles wide at that point, as well as to several other local conditions. At Hammond, six miles from the river, frosts occur somewhat earlier.

So far as can be learned, frosts occur in the southern portion of the Adirondack region proper about three weeks earlier than in the Mohawk valley. Mr. C. A. McCoy of Sageville, who furnished this estimate as the result of many years of observation, places the average date of the last killing frosts of spring between May 25th and June 5th, and that of the first of autumn between September 1st and 15th.

In the mountainous section of the northeastern Adirondacks the last frost of spring occurs near the close of May and the first of autumn about September 20th, as stated by Mr. J. H. Bailey of Keene Valley, Essex County.

## Periods of Navigation in Lakes, Rivers and Canals.

TABLE No. 15.

*Dates of Opening and Closing of Navigation in the Hudson River at Albany.*

[Dates from 1846 to 1888 were obtained from the "Climate of New Jersey," by J. C. Smock. The records from 1888 to 1892 were furnished by the State Engineer, Albany.]

YEARS.	River open.	River closed.	Number of days open.	YEARS.	River open.	River closed.	Number of days open.
1846.	February 26	November 25	.....	1841.....	March 24	December 19	270
1875-6.....	February 26	.....	.....	1842.....	February 4	November 29	298
1786.....	March 23	.....	.....	1843.....	April 13	December 9	240
1789.....	.....	Feb. 3 (1790)	.....	1844.....	March 14	December 11	272
1790.....	March 27	December 8	256	1845.....	February 24	December 4	238
1791.....	March 17	December 8	266	1846.....	March 15	December 15	275
1792.....	.....	December 12	.....	1847.....	April 6	December 24	262
1793.....	March 6	December 26	295	1848.....	March 22	December 27	290
1794.....	March 17	Jan. 12 (1795)	301	1849.....	March 19	December 25	281
1795.....	.....	Jan. 23 (1796)	.....	1850.....	March 9	December 17	238
1796.....	.....	November 28	.....	1851.....	February 25	December 13	261
1797.....	.....	November 26	.....	1852.....	March 28	December 22	269
1798.....	.....	November 23	.....	1853.....	March 21	December 21	275
1799.....	.....	Jan. 6 (1800)	.....	1854.....	March 17	December 8	266
1800.....	.....	Jan. 3 (1801)	.....	1855.....	March 20	December 20	275
1801.....	February 23	Feb. 3 (1802)	340	1856.....	April 10	December 16	250
1802.....	.....	December 16	.....	1857.....	February 27	December 27	308
1803.....	.....	Jan. 12 (1804)	.....	1858.....	March 20	December 18	273
1804.....	April 6	December 13	261	1859.....	March 13	December 10	272
1805.....	.....	Jan. 9 (1806)	.....	1860.....	March 6	December 14	283
1806.....	February 20	December 11	294	1861.....	March 5	December 23	293
1807.....	April 8	Jan. 4 (1808)	271	1862.....	April 4	December 19	259
1808.....	March 10	December 9	274	1863.....	April 3	December 11	252
1809.....	.....	Jan. 19 (1810)	.....	1864.....	March 11	December 12	276
1810.....	.....	December 14	.....	1865.....	March 22	December 10	269
1811.....	.....	December 20	.....	1866.....	March 20	December 15	270
1812.....	.....	December 21	.....	1867.....	March 26	December 8	267
1813.....	March 12	December 22	285	1868.....	March 24	December 5	256
1814.....	.....	December 10	.....	1869.....	April 5	December 9	248
1815.....	.....	December 2	.....	1870.....	March 21	December 17	261
1816.....	.....	December 16	.....	1871.....	March 12	November 29	262
1817.....	.....	December 7	.....	1872.....	April 7	December 9	246
1818.....	March 25	December 14	264	1873.....	April 16	November 22	220
1819.....	April 3	December 13	254	1874.....	March 19	December 12	266
1820.....	March 25	November 18	238	1875.....	April 13	November 29	290
1821.....	March 15	December 13	273	1876.....	April 1	December 2	245
1822.....	March 15	December 24	284	1877.....	March 30	December 31	276
1823.....	March 24	December 16	267	1878.....	March 14	December 20	281
1824.....	March 3	Jan. 5 (1825)	308	1879.....	April 4	December 20	260
1825.....	March 6	December 13	282	1880.....	March 5	November 25	265
1826.....	February 26	December 24	301	1881.....	March 21	Jan. 2 (1882)	287
1827.....	March 20	December 25	298	1882.....	March 8	December 4	272
1828.....	February 8	December 23	319	1883.....	March 29	December 15	261
1829.....	April 1	Jan. 11 (1830)	285	1884.....	March 25	December 19	269
1830.....	March 15	December 23	283	1885.....	April 7	December 13	250
1831.....	March 15	December 5	265	1886.....	March 30	December 3	248
1832.....	March 25	December 31	271	1887.....	April 9	December 20	255
1833.....	March 21	December 13	267	1888.....	April 5	.....	.....
1834.....	February 21	December 15	297	1889.....	March 19	Not closed...	286
1835.....	March 25	November 30	250	1890.....	Entire winter	December 3	337
1836.....	April 4	December 7	247	1891.....	March 23	December 4	277
1837.....	March 28	December 13	260	1892.....	March 31	.....	.....
1838.....	March 19	November 25	251	Averages	March 20	December 16	271
1839.....	March 21	December 18	272				
1840.....	February 21	December 5	288				

NOTE.—The Report of the New York Regents (1850-1863) gives a record of dates of closing of navigation at Hudson city during 54 years, 1817-70. The average date of closing computed from the series is December 18th.

TABLE No. 16.

*Date of freezing over of Lake Champlain at its widest part, opposite the city of Burlington, Vermont; also, date of opening of the lake, with duration of ice each year from 1816 to 1892.*

[From memoranda kept by John Johnson, Joseph D. Allen and Charles E. Allen of Burlington, Vt. (Width of lake at point of observation is ten miles.)]

YEAR.	Broad lake closed.	Broad lake open.	Days duration of ice.	YEAR.	Broad lake closed.	Broad lake open.	Days duration of ice.
1816.....	February 9	April 5	56	1855.....	February 4	April 20	75
1817.....	January 29	April 16	77	1856.....	January 22	April 18	87
1818.....	February 2	April 15	72	1857.....	January 15	April 9	84
1819.....	March 4	April 17	44	1858.....	February 12	April 6	53
1820.....	February 8	March 12	38	1859.....	January 11	April 2	51
1821.....	March 8	March 12	38	1860.....	February 2	April 2	61
1822.....	January 15	April 21	96	1861.....	January 23	April 14	81
1823.....	January 24	March 30	65	1862.....	February 5	April 23	77
1824.....	February 7	April 5	57	1863.....	February 4	April 26	81
1825.....	January 22	February 11	20	1864.....	February 17	March 13	25
1826.....	February 9	April 1	51	1865.....	January 17	April 5	78
1827.....	February 1	March 24	51	1866.....	January 30	April 11	71
1828.....	January 21	March 31	69	1867.....	January 20	April 8	78
1829.....	Not closed.....	.....	.....	1868.....	January 7	April 15	99
1830.....	January 30	April 4	64	1869.....	January 19	April 20	91
1831.....	January 15	April 12	87	1870.....	February 25	April 12	46
1832.....	January 16	April 10	84	1871.....	January 24	March 12	47
1833.....	February 6	April 17	71	1872.....	January 8	April 22	105
1834.....	February 2	April 6	63	1873.....	January 29	April 25	88
1835.....	April 14	April 21	7	1874.....	February 1	March 27	54
1836.....	January 10	April 12	92	1875.....	January 16	April 30	101
1837.....	January 27	April 21	85	1876.....	February 2	April 24	82
1838.....	January 15	April 28	103	1877.....	January 15	April 5	80
1839.....	February 2	April 13	70	1878.....	January 29	March 1	30
1840.....	January 25	April 6	71	1879.....	January 29	April 22	32
1841.....	January 25	February 20	26	1880.....	February 2	March 28	34
1842.....	February 18	April 26	67	1881.....	January 19	March 25	93
1843.....	Not closed.....	.....	.....	1882.....	January 23	March 4	71
1844.....	February 26	April 23	66	1883.....	January 26	April 23	86
1845.....	January 25	April 11	77	1884.....	January 8	April 19	101
1846.....	February 3	March 26	51	1885.....	January 24	April 25	91
1847.....	February 10	March 30	48	1886.....	January 24	April 15	80
1848.....	February 15	April 24	68	1887.....	January 8	April 30	111
1849.....	February 13	March 31	47	1888.....	January 23	April 24	91
1850.....	February 7	March 30	51	1889.....	February 7	April 11	64
1851.....	Not closed.....	.....	.....	1890.....	February 10	February 11	1
1852.....	February 1	March 30	47	1891.....	February 21	February 28	7
1853.....	January 18	April 21	93	1892.....	January 27	January 31	4
1854.....	January 28	April 10	72		February 14	February 27	13
	January 28	April 11	73			April 3	47
Averages					January 30	April 7	66.6

TABLE 17.

*Time of arrival of first boat at Plattsburgh, 1843 to 1891.*

[Record of the "Plattsburgh Republican," furnished by C. F. Bixby, Editor and Proprietor.]

YEAR.	Arrival.	YEAR.	Arrival.	YEAR.	Arrival.	YEAR.	Arrival.
1843.....	April 27	1856.....	April 23	1869.....	April 26	1882.....	April 5
1844.....	April 19	1857.....	April 10	1870.....	April 19	1883.....	April 24
1845.....	April 1	1858.....	April 7	1871.....	March 17	1884.....	April 23
1846.....	April 7	1859.....	March 31	1872.....	April 24	1885.....	April 25
1847.....	May 1	1860.....	April 1	1873.....	April 18	1886.....	April 19
1848.....	April 11	1861.....	April 15	1874.....	April 6	1887.....	April 30
1849.....	April 8	1862.....	April 30	1875.....	May 1	1888.....	April 25
1850.....	March 25	1863.....	April 27	1876.....	April 25	1889.....	April 12
1851.....	April 3	1864.....	April 13	1877.....	April 13	1890.....	April 12
1852.....	April 24	1865.....	April 6	1878.....	April 1	1891.....	April 9
1853.....	April 12	1866.....	April 12	1879.....	April 28	1892.....	.....
1854.....	April 19	1867.....	April 17	1880.....	April 1		
1855.....	April 23	1868.....	April 17	1881.....	April 21	Average.	April 15

TABLE 18.

*Record of sleighing across Lake Champlain on the ice, between Plattsburgh and Burlington, from 1868 to 1883, inclusive.*

[From the "Plattsburgh Republican."]

YEAR.	First trip.	Last trip.	YEAR.	First trip.	Last trip.
1868.....	January 9	March 17	1876.....	February 4	April 3
1869.....	January 23	March 27	1877.....	January 2	March 26
1870.....	February 10	March 30	1878.....	February 9	March 6
1871.....	January 23	March 8	1879.....	January 27	April 7
1872.....	January 9	March 9	1880.....	February 17	February 26
1872-1873.....	December 30	April 5	1881.....	January 17	February 19
1874.....	February 4	March 14	1882.....	February 1	March 2
1875.....	January 6	April 1	1883.....	January 23	April 10
Average.....	January 23	March 19			

TABLE 18A.

The following table of water levels of Lake Champlain is furnished by Mr. Bixby from the records of the Plattsburgh Republican.

YEAR.	Highest rise.		Lowest fall.		YEAR.	Highest rise.		Lowest fall.	
	Ft.	In.	Ft.	In.		Ft.	In.	Ft.	In.
1874.....	7	8	12	10	1880.....	9	6	13	8½
1875.....	8	6	12	8	1881.....	8	9	13	2½
1876.....	6	7	13	3	1882.....	9	5	13	2½
1877.....	8	10	13	2½	1883.....	7	11	13	3½
1878.....	8	5	12	4	1884.....	7	3	13	2½
1879.....	7	0	13	4	1885.....	7	0	11	11
					1886.....	7	10½	12	11½
Average for twelve years.....	8	0.5	13	0					

TABLE No. 19.

*Dates of opening navigation in the St. Lawrence river, at Ogdensburg, from 1832 to 1892, and dates of closing navigation from 1832 to 1870. Records from 1832 to 1870 from New York Regents' Reports. Remaining records from the Collector of Customs, Ogdensburg.*

YEARS.	Navigation opens.	Navigation closes.	YEARS.	Navigation opens.	Navigation closes.
1832.....	.....	December 30	1863.....	April 14	December 11
1833.....	April 12	December 21	1864.....	April 18	December 16
1834.....	April 2	December 17	1865.....	April 3	December 16
1835.....	April 4	November 28	1866.....	April 11	December 17
1836.....	April 20	December 7	1867.....	April 17	December 10
1837.....	April 20	December 20	1868.....	April 1	December 19
1838.....	April 12	December 7	1869.....	April 14	December 23
1839.....	April 11	December 26	1870.....	April 11	December 20
1840.....	April 1	December 9	1871.....	March 21	.....
1841.....	April 16	December 8	1872.....	April 17	.....
1842.....	March 24	December 1	1873.....	April 15	.....
1843.....	May 3	December 20	1874.....	March 31	.....
1844.....	April 6	December 16	1875.....	April 27	.....
1845.....	April 1	December 15	1876.....	April 14	.....
1846.....	April 6	December 26	1877.....	April 10	.....
1847.....	April 20	December 8	1878.....	March 21	.....
1848.....	April 4	December 25	1879.....	April 19	.....
1849.....	April 14	December 21	1880.....	April 1	.....
1850.....	March 30	December 12	1881.....	March 26	.....
1851.....	April 6	December 16	1882.....	March 23	.....
1852.....	April 5	December 26	1883.....	April 18	.....
1853.....	April 4	December 21	1884.....	April 7	.....
1854.....	April 13	December 13	1885.....	April 23	.....
1855.....	April 21	December 17	1886.....	April 10	.....
1856.....	April 29	December 22	1887.....	April 15	.....
1857.....	April 25	December 29	1888.....	April 11	.....
1858.....	April 8	December 7	1889.....	April 1	.....
1859.....	April 12	December 17	1890.....	April 1	.....
1860.....	April 9	December 18	1891.....	April 4	.....
1861.....	April 12	December 9	1892.....	April 8	.....
1862.....	April 11	December 18	Average.....	April 10	December 16

TABLE No. 20.

*Dates of opening navigation on Lake Erie, at Buffalo, from 1807 to 1890, and dates of closing navigation from 1871 to 1890. Records from 1807 to 1871, from New York Regents' Reports. Remaining records from Reports of the Chief Signal Officer.*

Year.	Navigation opened.	Year.	Navigation opened.	Year.	Navigation opened.	Year.	Navigation opened.	Navigation closed.
1807...	June 1	1823...	April 1	1849...	March 25	1871...	April 1	December 27
1808...	.....	1829...	May 8	1850...	March 25	1872...	May 5	December 18
1809...	May 26	1830...	April 11	1851...	April 2	1873...	April 29	November 28
1810...	April 30	1831...	May 8	1852...	April 20	1874...	April 18	December 5
1811...	June 4	1832...	April 28	1853...	April 14	1875...	May 12	December 11
1812...	.....	1833...	April 24	1854...	April 29	1876...	May 10	December 17
1813...	.....	1834...	April 6	1855...	April 21	1877...	April 20	December 18
1814...	April 19	1835...	May 8	1856...	May 9	1878...	March 16	December 7
1815...	.....	1836...	April 27	1857...	April 27	1879...	April 24	December 14
1816...	May 16	1837...	May 5	1858...	April 15	1880...	March 19	December 8
1817...	April 29	1838...	March 31	1859...	April 7	1881...	May 1	December 30
1818...	April 21	1839...	April 11	1860...	April 17	1882...	March 26	December 1
1819...	May 6	1840...	April 24	1861...	April 13	1883...	April 25	December 7
1820...	May 1	1841...	April 14	1862...	April 15	1884...	April 22	December 6
1821...	May 13	1842...	March 7	1863...	April 8	1885...	May 2	November 9
1822...	April 15	1843...	May 6	1864...	April 13	1886...	April 15	December 7
1823...	May 3	1844...	March 8	1865...	April 26	1887...	April 17	December 14
1824...	April 23	1845...	April 3	1866...	April 28	1888...	April 29	December 6
1825...	March 12	1846...	April 4	1867...	April 21	1889...	April 12	December 14
1826...	May 23	1847...	April 23	1868...	April 19	1890...	March 31	.....
1827...	April 21	1848...	April 9	1869...	May 2			
				1870...	April 16	Av'ge.	April 7	December 9

TABLE No. 21.

*Dates of opening of navigation on Lake Ontario at Oswego, from 1835 to 1892, and dates of closing navigation from 1871 to 1892. Records from 1835 to 1871, from New York Regent's Report. Remaining records from the collector of customs, Oswego.*

YEARS.	Navigation opens.	YEARS.	Navigation opens.	Navigation closes.
1835.....	April 2	1863.....	April 2	.....
1836.....	April 16	1864.....	April 5	.....
1837.....	April 1	1865.....	April 1	.....
1838.....	April 6	1866.....	March 17	.....
1839.....	April 3	1867.....	April 6	.....
1840.....	April 4	1868.....	April 1	.....
1841.....	April 6	1869.....	April 10	.....
1842.....	March 7	1870.....	April 6	December 19
1843.....	April 8	1871.....	March 20	December 13
1844.....	March 15	1872.....	April 13	December 12
1845.....	March 28	1873.....	April 7	December 6
1846.....	March 24	1874.....	March 31	December 4
1847.....	March 25	1875.....	April 13	December 9
1848.....	January 8	1876.....	April 5	December 28
1849.....	April 5	1877.....	April 14	December 26
1850.....	March 28	1878.....	March 11	December 10
1851.....	March 21	1879.....	April 9	December 16
1852.....	March 30	1880.....	March 10	January, '81 24
1853.....	April 1	1881.....	April 2	December 5
1854.....	March 12	1882.....	March 22	November 30
1855.....	January 19	1883.....	April 6	December 11
1856.....	January 18	1884.....	April 5	December 12
1857.....	February 27	1885.....	May 2	December 15
1858.....	January 3	1886.....	April 1	December 7
1859.....	February 13	1887.....	April 9	December 6
1860.....	April 19	1888.....	April 14	December 11
1861.....	April 6	1889.....	April 4	December 18
1862.....	April 1	1890.....	March 25	January, '91 17
1863.....	March 9	1891.....	April 4	December 23
1864.....	April 1	1892.....	April 5	December 21
1865.....	April 2	Average.....	March 28	December 16

TABLE No. 22.

*Dates of opening and closing of the Erie Canal. Records to 1871 obtained from the New York Regent's Reports. Later records furnished by the State Engineer.*

YEARS.	Canal opened.	Canal closed.	No. of days of navigation.	YEARS.	Canal opened.	Canal closed.	No. of days of navigation.
1894.....	April 30	December 4	319	1860.....	April 25	December 12	232
1895.....	April 12	December 5	288	1861.....	May 1	December 10	224
1896.....	April 20	December 18	243	1862.....	May 1	December 10	224
1897.....	April 23	December 18	241	1863.....	May 1	December 9	223
1898.....	March 27	December 20	269	1864.....	April 30	December 8	223
1899.....	May 2	December 17	290	1865.....	May 1	December 12	226
1890.....	April 20	December 17	242	1866.....	May 1	December 12	226
1891.....	April 16	December 1	230	1867.....	May 6	December 20	229
1892.....	April 25	December 21	241	1868.....	May 4	December 7	217
1893.....	April 19	December 12	238	1869.....	May 6	December 10	218
1894.....	April 17	December 12	240	1870.....	May 10	December 10	214
1895.....	April 15	November 30	230	1871.....	April 24	December 1	220
1896.....	April 25	November 26	216	1872.....	May 13	December 1	202
1897.....	April 20	December 9	234	1873.....	May 15	December 5	205
1898.....	April 12	November 25	228	1874.....	May 5	December 5	215
1899.....	April 20	December 16	241	1875.....	May 18	November 30*	197
1840.....	April 20	December 8	223	1876.....	May 4	December 1	211
1841.....	April 24	November 30	221	1877.....	May 8	December 7	214
1842.....	April 20	November 28	222	1878.....	April 15	December 7	227
1843.....	May 1	November 30	214	1879.....	May 8	December 6	213
1844.....	April 18	November 26	222	1880.....	April 16	November 21*	220
1845.....	April 15	November 29	228	1881.....	May 12	December 8	211
1846.....	April 16	November 25	224	1882.....	April 11	December 7	241
1847.....	May 1	November 30	214	1883.....	May 7	December 1	208
1848.....	May 1	December 9	223	1884.....	May 6	December 1	209
1849.....	May 1	December 5	219	1885.....	May 11	December 1	205
1850.....	April 22	December 11	234	1886.....	May 1	December 1	214
1851.....	April 15	December 5	235	1887.....	May 7	December 1	208
1852.....	April 20	December 16	239	1888.....	May 10	December 3	207
1853.....	April 20	December 20	245	1889.....	May 1	November 30	214
1854.....	May 1	December 3	217	1890.....	April 28	November 30	216
1855.....	May 1	December 10	224	1891.....	May 5	December 5	215
1856.....	May 5	December 4	214	1892.....	May 1	.....	.....
1857.....	May 6	December 15	223				
1858.....	April 23	December 8	225				
1859.....	April 15	December 12	242	Average..	April 27	December 6	224

\* By ice.



TABLE No. 23.

*Date of disappearance of ice from Otsego Lake, furnished by Mr. G. Pomeroy Keese.*

YEAR.	Date.	YEAR.	Date.	YEAR.	Date.	YEAR.	Date.
1841.....	April 25	1855.....	April 24	1869.....	April 21	1882.....	April 6
1842.....	March 30	1856.....	April 26	1870*.....	April 16	1883.....	April 26
1843.....	April 26	1857.....	April 6	1871†.....		1884.....	April 22
1844.....	April 13	1858.....	April 6	1872.....	April 27	1885.....	April 26
1845.....	April 1	1859.....	March 30	1873.....	May 4	1886.....	April 14
1846.....	April 7	1860.....	April 7	1874.....	May 5	1887.....	April 23
1847.....	April 25	1861.....	April 14	1875.....	May 7	1888.....	April 30
1848.....	April 10	1862.....	April 22	1876.....	April 26	1889.....	April 11
1849.....	April 7	1863.....	April 23	1877.....	April 27	1890.....	April 8
1850.....	April 24	1864.....	April 21	1878.....	April 1	1891.....	April 15
1851.....	March 30	1865.....	April 5	1879.....	April 30	1892.....	April 5
1852.....	April 26	1866.....	April 14	1880.....	April 7		
1853.....	April 9	1867.....	April 16	1881.....	April 25	Average.	April 17
1854.....	April 20	1868.....	April 16				

*Cazenovia Lake.*—Average date of opening, April 12th, and of closing, December 12. From a record of 36 years, 1835 to 1870, published in reports of New York Regents. Earliest date of opening, March 20, 1859; latest date, April 26, 1843, 1847, 1856. Earliest date of closing, November 30, 1838, and (partly) November 26, 1869. Latest date of closing, December 27, 1848.

*Canandaigua Lake.*—Average date of opening, March 31st, and of closing, February 18. From a record of 16 years, 1856–1871, in reports of New York Regents. In 1857, 1859, 1862, 1867, the lake did not freeze over.

The following general statements are given in cases where no statistical tables could be obtained:

#### CAYUGA LAKE.

Ice forms over the shallows at the head and foot of the lake, closing navigation, on an average, early in December and breaks up at the close of March or early in April. The lake is said, on good authority, to have frozen solidly over its entire length twice in the past twenty-five years. The greatest depth of the lake is, from the Cornell University surveys, 435 feet, opposite Sheldrake.

\* Closed January 8, 1870.

† Closed December 21, 1871.

## SENECA LAKE.

The pamphlet of Dr. W. D. Wilson, previously quoted, states that "Seneca Lake never freezes over far from the shore." Ice usually forms, however, to some extent in the shallow section near the foot of the lake. Mr. W. B. Dunning, of the Seneca Lake Navigation Company, informs the writer that the company's steamers run throughout the year. The surveys made by the college of civil engineering, Cornell University, give the greatest depth of Seneca Lake as 618 feet, opposite North Hector.

## KEUKA LAKE.

Mr. W. W. Eastman, Superintendent of the Keuka Lake Navigation Company, furnishes the following statement: "Our lake usually freezes at this end (near Penn Yan) about the 24th or 25th of December, but only from 5 to 10 miles up. The west branch, at the Branchport end, freezes about the same time, but seldom further than Pultney, about 5 miles. The upper end, from Hammondsport to Gibsons and Keuka and usually down as far as Ogoyago, as a rule is open; but I have known it to be closed the entire length. We have run a boat from Penn Yan to Hammondsport as late as the 11th of February and have run in January quite often. We usually run a boat on the upper end all winter." The greatest depth of Keuka Lake is 186 feet, about midway up the west branch, according to University surveys.

## CHAUTAUQUA LAKE.

Mr. C. E. Grandin, Superintendent of the Chautauqua Steamboat Company, states that "the ice came last year (1891) about December 20th and went out March 24th. This would be a fair average for this lake. However, during January, 1876, steamers made regular trips for four days, beginning with the 1st, an unusual occurrence."

## LAKE PLEASANT

and others of the same chain in the southern Adirondacks usually become frozen between November 15th and December 10th, as observed by Mr. G. A. McCoy of Sageville.

## Precipi

TABLE 24 — AVERAGE MONTHLY,

STATION.	County.	Elevation above tide	Length of record	From-To	January.	February.	March.
		Feet.	Yrs.				
<b>Western Plateau</b> .....		<b>1,307</b>			<b>2.52</b>	<b>2.23</b>	<b>2.51</b>
Humphrey †.....	Cattaraugus.....	1,950	7	1884-91	3.07	2.60	2.70
Middlebury (or dale).....	Wyoming.....	1,190	17	18 6-48	1.46	1.77	2.36
Little Genesee†.....	Allegany.....	1,500	7	1866-73	3.22	2.58	2.34
Nile†.....	.....	1,600	7	1876-90	3.16	2.66	2.50
Prattsburgh †.....	Steuben.....	1,494	9	1829-45	1.90	1.94	2.00
Mt. Morris†.....	Livingston.....	525	8	1885-92	.....	.....	.....
Elmira.....	Chemung.....	863	10	1850-62	2.34	1.82	2.28
<b>Eastern Plateau</b> .....		<b>1,058</b>			<b>2.52</b>	<b>2.34</b>	<b>2.46</b>
Whelen.....	Orange.....	425	10	1834-40	2.50	2.42	2.52
Montgomery.....	.....	380	11	1830-42	2.64	2.22	2.24
Port Jervis †.....	.....	470	9	1840-50	4.08	3.20	3.16
Liberty.....	Sullivan.....	1,500	12	1850-63	2.69	3.14	2.78
Cooperstown.....	Otsego.....	1,900	39	1854-92	2.61	2.39	2.59
Cherry Valley.....	.....	1,320	13	1830-51	2.66	2.57	2.60
Hartwick.....	.....	1,100	10	1830-40	2.35	1.74	2.25
Oxford.....	Chenango.....	980	20	1830-52	2.47	2.21	2.27
Waverly.....	Tioga.....	825	10	1832-42	2.20	1.91	2.50
Homer.....	Cortland.....	1,100	14	1850-63	2.81	2.79	2.69
Cazenovia.....	Madison.....	1,900	27	1830-74	2.86	2.52	3.15
Hamilton.....	.....	1,127	18	1827-49	2.25	1.65	2.27
Pompey.....	Onondaga.....	1,900	16	1830-52	1.69	1.60	1.26
Onondaga.....	.....	1,260	11	1832-43	2.01	1.49	1.52
<b>Northern Plateau</b> .....		<b>973</b>			<b>3.11</b>	<b>2.78</b>	<b>3.06</b>
Constableville †.....	Lewis.....	1,246	4	1822-92	6.16	6.64	3.90
Lowville.....	.....	547	22	1827-72	2.39	2.54	2.12
Fairfield.....	Herkimer.....	1,185	17	1832-72	2.63	1.79	2.32
Johnstown.....	Fulton.....	660	12	1830-45	3.14	2.72	3.78
Pottersville †.....	Warren.....	875	4	1879-53	1.90	1.80	2.50
Elizabethtown †.....	Essex.....	600	4	.....	.....	.....	.....
Keene Valley †.....	.....	1,015	5	1879-81	2.16	2.10	3.00
Dannemora †.....	Clinton.....	1,356	5	1880-91	3.50	2.90	3.90
<b>Coast Region</b> .....		<b>132</b>			<b>3.47</b>	<b>3.22</b>	<b>3.74</b>
Block Island, R. I.....	.....	27	18	1880-92	4.42	4.53	4.07
East Hampton.....	Suffolk.....	16	16	1828-52	3.93	2.31	2.54
Serauket†.....	.....	40	7	1816-42	4.40	3.90	5.10
Fort Columbus.....	New York.....	25	49	1838-90	3.80	3.83	3.69
New York City.....	.....	164	23	1810-92	3.96	3.65	4.12
Mt. Pleasant.....	Westchester.....	125	13	1830-44	2.16	1.50	2.55
Tarrytown.....	.....	152	12	1860-72	3.07	3.20	3.84
White Plains.....	.....	273	30	1862-91	4.58	4.41	4.24
Croton Dam.....	.....	196	12	1860-72	2.99	2.99	4.20
North Salem.....	.....	361	20	1830-56	2.93	2.40	3.04
<b>Hudson Valley</b> .....		<b>230</b>			<b>2.89</b>	<b>2.26</b>	<b>2.88</b>
Ardena.....	Putnam.....	157	22	1869-90	2.63	2.65	3.70
West Point.....	Orange.....	167	47	1840-92	3.57	3.82	3.60
Newburgh.....	.....	65	25	1830-71	2.73	2.46	2.53
Poughkeepsie.....	Dutchess.....	.....	15	1830-70	3.34	2.08	3.22
Honeymead Brook †.....	.....	426	9	1884-92	3.95	2.66	3.81
Red Hook.....	.....	.....	11	1830-42	2.86	1.54	2.39
Kingston.....	Ulster.....	188	19	1830-49	2.92	1.93	2.74
Hudson.....	Columbia.....	150	15	1830-70	2.87	1.97	3.22
Kinderhook.....	.....	125	17	1830-46	2.21	1.58	2.45
Albany.....	Albany.....	85	19	1874-92	3.07	2.60	2.87
Troy Water-works*.....	Rensselaer.....	.....	65	1826-90	2.55	2.19	2.45
Cambridge.....	Washington.....	500	13	1827-39	2.55	2.19	2.45
<b>Champlain Valley</b> .....		<b>262</b>			<b>1.73</b>	<b>1.35</b>	<b>1.94</b>
Plattsburgh.....	Clinton.....	125	32	1840-92	1.77	1.43	2.05
Burlington, Vt.....	.....	400	15	1877-91	1.09	1.37	1.52
<b>St. Lawrence Valley</b> .....		<b>414</b>			<b>2.19</b>	<b>2.15</b>	<b>2.49</b>
Gouverneur.....	St. Lawrence.....	400	27	1837-74	2.30	1.92	2.16
North Hammond.....	.....	7340	15	1866-92	2.93	2.64	2.61
Potsdam.....	.....	394	20	1818-48	1.40	1.06	1.45
Ogdensburg †.....	.....	232	5	1850-60	2.10	2.65	3.85
Malone.....	Franklin.....	703	11	1860-77	2.24	2.46	2.84

tation.

## ANNUAL AND SEASONAL PRECIPITATION.

April.	May.	June.	July.	August.	September.	October.	November.	December.	Annual.	Spring.	Summer.	Autumn.	Winter.
2.68	3.36	4.23	3.25	3.13	2.90	3.28	2.76	2.73	35.58	8.58	10.61	8.94	7.48
3.51	4.90	5.15	3.50	4.60	4.50	3.83	3.60	3.28	45.14	10.91	13.35	11.93	8.95
2.46	2.92	3.40	3.20	2.81	2.83	2.58	2.56	1.79	30.44	7.64	9.51	8.27	5.02
2.34	2.23	3.53	4.31	2.81	2.89	3.22	2.95	3.11	86.46	7.84	10.65	9.06	8.91
1.90	3.02	5.14	3.10	2.15	2.24	3.14	2.59	2.72	34.72	7.42	10.29	8.37	8.54
2.25	3.00	4.20	3.00	3.00	2.56	3.58	2.86	2.82	32.41	7.25	10.10	8.30	6.66
.....	.....	3.52	2.87	3.45	.....	.....	.....	.....	.....	.....	9.84	.....	.....
3.89	4.08	4.67	3.05	3.08	2.38	3.20	2.11	2.66	35.56	10.25	10.80	7.69	6.82
2.80	3.54	4.16	4.04	3.50	3.13	3.31	2.81	2.82	37.43	8.81	11.69	9.26	7.68
2.14	3.80	3.53	2.98	2.55	2.74	2.95	2.27	3.40	33.30	7.96	9.66	7.96	8.32
2.32	3.05	4.06	3.86	2.02	2.53	3.28	2.74	3.12	34.18	7.61	10.04	8.55	7.98
2.60	4.17	3.79	5.52	4.83	3.20	2.86	2.80	3.10	42.78	9.93	14.14	8.36	10.35
4.62	4.25	5.18	4.52	4.00	3.68	3.11	3.77	4.31	45.81	11.68	14.00	9.96	10.17
2.63	3.55	4.23	4.29	4.02	3.82	3.81	3.07	2.67	38.53	8.77	12.54	9.70	7.57
3.03	4.04	4.35	3.24	3.45	3.55	3.00	3.18	3.07	40.84	9.87	12.04	10.63	8.30
4.45	3.52	3.65	3.80	2.87	3.15	3.72	3.17	2.62	36.32	10.22	10.52	9.07	6.71
2.52	3.61	4.27	3.77	3.34	3.35	3.36	2.73	2.47	36.16	8.89	11.38	9.44	7.15
1.94	3.20	3.75	3.57	4.25	2.94	2.74	2.31	2.00	33.81	7.64	11.57	7.99	6.11
4.12	4.15	5.55	4.92	3.78	4.40	4.06	3.66	3.23	45.98	11.16	14.25	11.72	8.83
3.05	3.50	4.41	4.19	3.68	3.49	3.65	2.90	3.08	40.48	9.70	12.28	10.04	8.46
1.93	2.98	3.48	3.79	2.70	3.68	3.12	2.54	2.78	84.12	7.13	9.97	9.34	7.68
1.78	3.08	4.21	4.12	3.19	2.95	3.23	2.10	1.57	90.76	6.12	11.52	8.26	4.86
2.12	3.20	3.74	3.12	3.62	2.76	3.10	2.66	1.99	81.63	7.14	10.48	8.52	5.49
2.66	3.45	3.28	4.09	3.50	3.19	3.47	3.48	2.90	38.97	9.17	10.87	10.14	8.79
3.20	4.80	3.50	5.60	4.50	4.00	4.60	5.90	5.30	16.50	11.90	18.60	13.90	17.10
2.11	2.73	3.43	3.53	3.04	2.82	3.24	3.03	2.54	33.55	6.96	10.04	9.09	7.46
2.49	3.13	4.29	4.21	3.65	3.04	3.56	2.46	2.71	36.81	7.94	12.15	9.10	7.12
2.63	3.84	4.35	4.12	3.35	2.72	3.86	3.57	3.19	40.37	9.75	11.82	9.65	9.15
2.40	2.80	1.90	3.00	2.70	3.00	2.70	2.50	1.90	29.00	7.70	7.60	8.20	5.50
.....	.....	1.90	3.00	2.70	3.00	2.70	2.50	1.90	29.00	.....	7.60	8.20	.....
2.90	3.85	2.50	3.50	3.20	3.40	3.14	3.00	2.20	34.45	9.25	9.20	9.54	6.46
2.90	4.00	4.80	5.80	4.90	3.50	5.04	4.90	3.40	45.94	10.70	15.00	13.44	9.80
3.50	3.90	3.53	4.20	4.54	3.59	3.93	3.87	3.44	44.93	11.16	12.27	11.37	10.13
3.03	3.81	2.96	3.12	3.41	3.24	4.16	4.22	3.82	44.79	10.91	9.49	11.62	12.57
3.22	3.66	2.98	2.60	3.22	3.27	3.15	3.16	3.17	37.30	10.02	8.80	10.08	8.40
4.99	3.20	3.40	4.00	5.10	4.00	5.12	4.70	3.70	50.82	12.50	12.50	13.82	12.00
3.05	3.93	3.67	4.07	4.72	3.50	3.32	3.45	3.65	43.74	10.67	12.46	10.30	10.31
3.35	3.10	3.39	4.56	4.81	3.83	3.37	3.86	3.14	45.14	10.57	12.76	11.06	10.75
3.57	3.63	3.33	4.31	3.83	3.03	3.27	2.44	2.67	36.29	9.75	11.47	8.74	6.83
3.26	4.56	3.80	5.03	5.41	3.69	4.22	4.23	3.27	47.58	11.66	14.24	12.14	9.54
3.76	3.32	3.70	5.10	4.56	3.41	3.18	4.25	4.56	49.37	11.32	13.36	10.84	13.85
3.78	5.68	4.66	5.22	6.16	4.78	4.79	5.26	2.83	53.34	13.66	16.04	14.83	8.81
3.14	4.06	3.37	4.03	4.15	3.14	4.21	3.16	3.38	40.96	10.51	11.55	10.24	8.66
2.82	3.53	3.68	4.24	3.69	2.90	3.52	3.15	2.89	38.46	9.23	11.62	9.57	8.04
3.72	3.78	3.29	4.41	3.92	3.09	3.84	3.93	3.08	42.04	11.20	11.62	10.66	8.86
4.50	4.96	3.60	4.68	4.84	3.12	3.81	3.95	3.62	47.47	13.06	13.02	10.88	10.51
2.09	4.51	3.65	3.50	3.58	2.74	3.64	3.09	2.43	36.85	9.13	10.73	9.37	7.62
2.87	3.60	3.66	4.09	4.41	2.54	3.94	3.36	3.23	40.33	9.69	12.16	9.83	8.65
2.14	3.19	2.89	5.90	4.68	3.50	3.29	3.28	2.95	41.44	8.14	13.67	10.07	9.56
3.18	3.03	3.99	4.31	2.83	2.45	2.75	2.46	2.36	34.15	8.60	11.13	7.66	6.76
2.15	3.43	3.49	3.72	2.81	2.26	3.11	3.37	3.17	36.10	8.32	10.02	8.74	8.02
2.28	3.09	3.60	3.66	2.60	2.23	4.51	2.67	3.09	35.29	8.59	9.86	9.41	7.43
2.97	3.41	4.55	4.85	3.35	2.94	3.25	2.69	2.75	36.48	8.86	12.25	8.88	6.49
2.49	3.08	3.81	4.28	4.03	3.53	3.28	3.02	2.73	36.79	8.41	12.12	9.88	8.40
2.70	3.16	3.86	4.06	3.52	3.17	3.49	2.99	2.62	36.78	8.34	11.48	9.65	7.36
2.70	3.16	3.86	4.06	3.52	3.17	3.49	2.99	2.62	36.78	8.34	11.48	9.65	7.36
1.88	2.63	3.16	3.24	3.39	3.09	3.12	2.61	1.92	30.06	6.44	9.79	8.83	5.00
1.86	2.51	2.90	3.32	3.11	2.85	2.98	2.35	1.88	29.01	6.42	9.33	8.18	5.08
1.89	2.75	3.41	3.15	3.68	3.33	3.27	2.87	1.97	31.10	6.46	10.24	9.47	4.93
2.21	2.82	3.54	3.39	2.75	3.26	2.44	2.71	2.57	33.52	7.52	9.68	9.41	6.91
1.71	2.37	2.60	2.56	1.99	3.13	3.84	2.70	2.28	29.06	6.24	7.15	9.17	6.50
2.06	3.27	3.12	3.62	3.53	3.72	4.95	3.78	2.74	38.57	7.94	10.32	12.00	8.31
1.70	3.03	3.31	4.03	2.81	3.11	3.84	1.98	1.44	25.63	6.20	10.15	8.88	3.90
2.97	3.45	5.02	3.88	3.43	2.61	2.52	3.84	3.70	37.63	9.08	11.82	8.27	8.45
2.59	2.40	3.64	3.35	1.96	3.71	3.28	2.37	2.71	33.70	8.13	8.95	9.21	7.41

TABLE 24 — AVERAGE MONTHLY,

STATION.	County.	Elevation above tide.	Length of record.	From-To.	January.	February.	March.
		Feet.	Yrs.				
<b>Great Lake Region</b> .....		<b>494</b>			<b>2.63</b>	<b>2.38</b>	<b>2.55</b>
Madison Barracks .....	Jefferson	262	34	1840-92	2.38	1.92	2.13
Pierrepont Manor .....		617	23	1849-71	2.25	2.10	2.30
Oswego .....	Oswego	250	35	1856-92	3.19	2.76	3.10
Oswego (U. S.) † .....		304	22	1870-92	3.01	2.50	2.75
Palermo .....	"	460	33	1860-92	3.20	2.95	2.89
Syracuse † .....	Onondaga	407	9	1840-2	2.26	2.10	2.03
Auburn .....	Cayuga	650	28	1827-59	2.16	2.20	2.24
Rochester .....	Monroe	500	60	1831-92	2.60	2.63	2.67
Rochester (U. S.) † .....		621	22	1870-92	3.21	2.68	3.02
Millville .....	Orleans	600	6	1842-47			
Lewiston .....	Niagara	280	14	1830-50	1.88	1.30	1.54
Fort Niagara .....		262	36	1841-92	2.02	2.01	2.13
Buffalo (U. S.) † .....	Erie	690	22	1870-92	2.95	2.79	2.64
Buffalo .....		600	39	1832-92	2.79	2.56	2.91
Fredonia .....	Chautauqua	715	16	1830-64	2.04	1.84	1.99
Erie, Pa. (U. S.) † .....		681	20	1873-92	3.61	3.40	2.91
<b>Central Lake Region</b> .....		<b>690</b>			<b>2.25</b>	<b>2.05</b>	<b>2.24</b>
Ithaca (University) .....	Tompkins	800	14	1879-92	2.28	2.00	2.23
Ithaca (city) .....	"	417	19	1830-74	1.81	1.76	2.51
Geneva .....	Ontario	567	20	1841-68	1.60	1.12	1.76
Waterburgh † .....	Tompkins	800	9	1874-92	3.22	2.41	2.87
Penn Yan .....	Yates	740	58	1824-83	1.59	1.60	1.77
Cavandagua .....	Ontario	813	7	1830-37	3.00	3.43	2.31
<b>Mohawk Valley</b> .....		<b>745</b>			<b>3.20</b>	<b>3.70</b>	<b>3.54</b>
Utica .....	Oneida	500	38	1826-92	3.34	3.10	3.07
South Trenton .....	"	835	10	1863-74	3.90	5.90	4.94
Hamilton College .....	"	900	11	1850-60	2.35	2.11	2.60
<b>Mean of the ten Regions.</b> .....		<b>630</b>			<b>2.65</b>	<b>2.45</b>	<b>2.74</b>

\* A series consolidated from observations at Troy, Lansingburgh and Albany. Investigation U. S. belong to the

† Averages for stations having less than ten years observations are cor-

## ANNUAL AND SEASONAL PRECIPITATION — (Concluded).

April.	May.	June.	July.	August.	September.	October.	November.	December.	Annual.	Spring.	Summer.	Autumn.	Winter.
2.26	2.97	3.29	3.19	2.91	3.24	3.61	3.24	2.88	35.17	7.78	9.36	10.11	7.89
1.80	2.51	2.57	3.01	2.63	3.14	3.44	3.09	2.49	33.51	6.84	8.21	11.67	6.79
2.60	3.36	3.66	3.42	3.14	3.66	4.06	3.60	3.06	36.20	8.26	9.22	11.31	7.41
2.61	3.12	3.42	3.58	2.88	3.20	3.56	3.70	3.56	38.68	8.88	9.83	10.46	9.51
2.04	2.65	3.61	3.33	2.54	2.79	3.33	3.33	3.29	35.16	7.44	9.48	9.45	8.80
2.11	2.56	3.20	3.31	2.63	3.18	3.54	3.70	3.70	37.06	7.56	9.14	10.42	9.85
2.81	3.16	3.66	3.58	2.58	3.62	3.91	3.39	3.10	36.75	8.65	9.72	10.92	7.46
2.23	3.36	3.59	3.59	3.37	3.14	3.41	3.01	2.72	35.42	7.83	10.55	9.56	7.48
2.33	3.02	3.19	3.21	2.81	2.95	3.24	2.95	2.69	34.49	8.22	9.21	9.14	7.92
2.46	3.07	3.40	3.04	3.04	2.34	3.04	2.95	2.75	35.00	8.55	9.48	8.33	8.64
.....	.....	.....	.....	.....	.....	.....	.....	.....	30.00	.....	.....	.....	.....
1.64	2.19	2.72	2.27	2.10	2.68	2.44	1.69	1.15	23.10	5.37	7.09	6.81	3.83
1.87	2.39	2.48	2.71	2.41	2.94	2.80	2.47	2.02	27.75	6.39	7.60	7.71	6.05
2.37	3.30	3.53	3.37	3.28	3.28	3.73	3.61	3.30	38.15	8.31	10.18	10.62	9.04
2.30	2.90	3.18	3.26	3.03	3.20	3.55	3.49	3.17	36.37	8.11	9.47	10.27	8.52
1.93	3.32	3.33	3.34	3.78	4.46	4.31	3.27	2.93	37.04	7.24	10.95	12.04	6.81
2.57	3.73	4.27	2.87	3.45	4.10	4.21	4.35	3.20	42.72	9.11	10.38	12.90	10.35
2.56	3.47	3.65	3.43	3.13	2.86	3.16	2.39	2.22	33.41	3.27	10.21	8.41	6.52
1.98	3.88	3.81	3.85	3.45	2.76	3.40	2.59	2.41	34.65	8.09	11.11	8.75	6.69
3.00	3.54	3.83	3.31	2.99	3.40	3.25	2.87	2.27	34.54	9.05	10.13	9.52	5.84
3.25	3.36	3.12	3.05	3.39	2.72	2.99	2.17	1.87	30.40	8.37	9.56	7.88	4.59
2.41	2.23	4.00	4.25	2.60	2.98	3.60	1.80	2.42	34.79	7.51	10.85	8.38	8.05
2.32	2.90	3.39	2.81	2.88	2.51	2.58	2.11	1.77	28.23	6.99	9.08	7.20	4.96
2.42	4.91	3.74	3.30	3.47	2.38	3.13	2.82	2.56	37.92	9.64	10.51	8.78	8.99
3.64	3.88	4.62	4.85	4.03	4.04	4.21	4.10	3.76	47.62	11.05	13.55	12.35	10.66
2.83	3.63	4.28	4.62	3.71	3.54	3.44	3.85	3.68	43.09	9.53	12.61	10.33	10.12
3.65	4.22	4.69	5.46	4.63	4.29	4.73	4.23	4.05	54.70	12.82	14.78	13.25	13.85
4.42	3.78	5.04	4.47	3.76	4.29	4.46	4.23	3.55	45.06	10.80	13.27	12.98	8.01
2.70	3.36	3.71	3.79	3.47	3.22	3.50	3.11	2.81	37.52	8.80	10.96	9.84	7.91

shows that the series may practically be considered as continuous.

† Stations designated

U. S. Weather Bureau.

rected by comparison with adjacent stations possessing longer records.

## IV. PRECIPITATION.

## ANNUAL FLUCTUATIONS OF RAINFALL.

The fluctuations in the average or normal amount of rainfall from month to month do not occur in a uniform manner over the entire area of New York, but must rather be classed under several quite distinct types depending upon atmospheric conditions which have already been summarily described in section I. The character of various types and their important modifications are shown in considerable detail by plates 2 and 3. It may be noted that the irregular lines in the diagrams have no meaning other than as connecting the points on the ordinates or verticals representing the average monthly rainfall.

A close approach to the continental type of rainfall, with its early summer maximum, is found over the central plateau regions (including the eastern and western plateaus and the southern Adirondack region) as represented by Cooperstown. Proceeding eastward to the central Hudson valley a July maximum is found which extends through the Champlain valley and over the Province of Quebec. In the southern Hudson valley the maximum varies from July to August, while south of the Highlands the August maximum obtains almost exclusively; also extending over Long Island to Setauket, but disappearing at East Hampton and Block Island. The Great Lakes and St. Lawrence valley show a June or July maximum, which, however, is secondary to that of autumn.

*Autumn Rains.*—Over the State, generally, a large precipitation obtains in October, as compared with the months immediately preceding and following. This constitutes the principal maximum of the year at several stations of the St. Lawrence valley, the central part of the Great Lake Region, central Long Island, and beyond the limits of New York, in New Brunswick, Nova Scotia and Ontario. Within this State an October *minimum* is found only in the vicinity of New York city, but is a feature common to the coast south of that point, and also obtains at several places in the interior of New England. A relatively light rainfall during September is characteristic of the State at large, whereas in the Upper Lake region the general autumn maximum occurs during that month. Erie, Pa., shows a November maximum, which feature also prevails in the Ohio valley.

# FLUCTUATIONS OF NORMAL RAINFALL. 2.

Average for Province of Ontario, Canada.

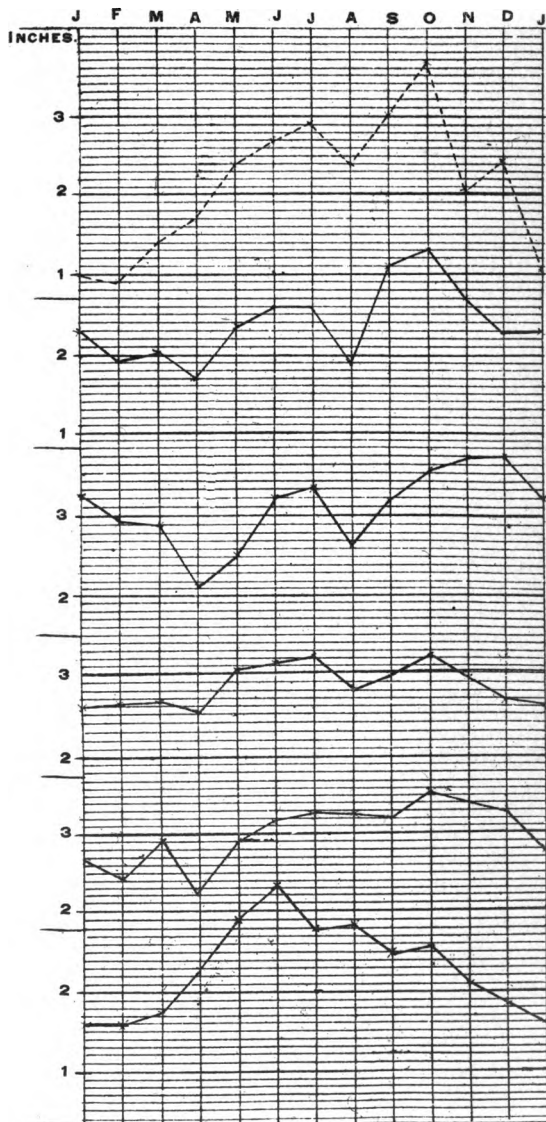
St. Lawrence Valley.—Governor.  
27 years.

Palermo.  
33 years.

Great Lakes.—Rochester.  
60 years.

Buffalo.  
39 years.

Central Lakes.—Pean Yan.  
58 years.







# FLUCTUATIONS OF NORMAL RAINFALL 1.

Central Plateau.—Coopersstown.  
39 years.

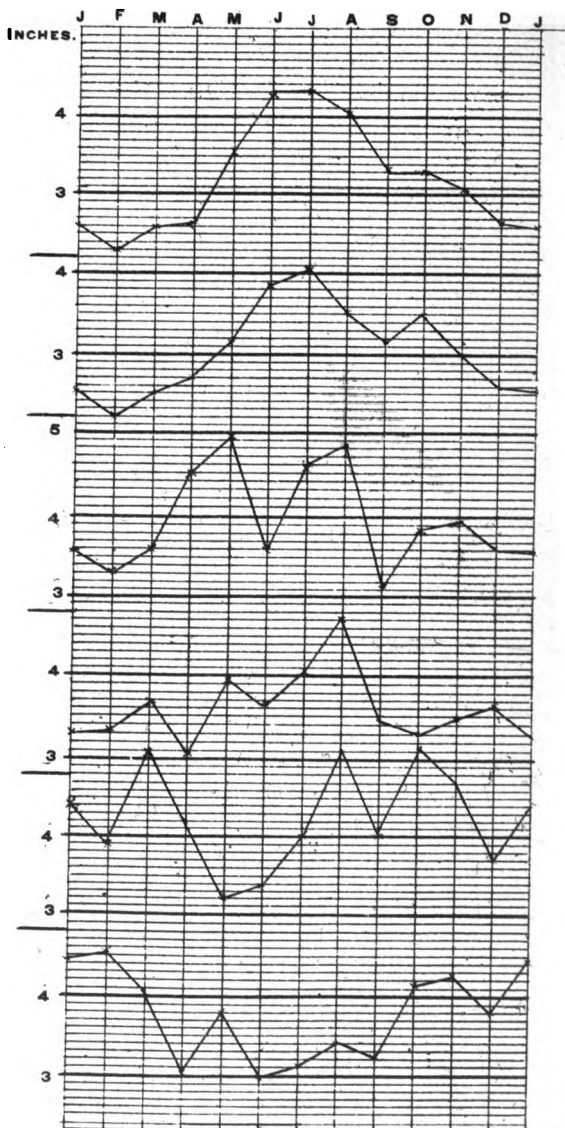
Upper Hudson Valley—Troy Waterworks.  
65 years.

Lower Hudson Valley.—West Point.  
47 years.

Fort Columbus.  
49 years.

Atlantic Coast.—  
Setauket, L. I.  
7 years.\*

Block Island.  
13 years.



\* Averages obtained by comparison  
with adjacent stations.



# RELATION OF RAINFALL TO STORM FREQUENCY AND TEMPERATURE.

Annual Fluctuation of Temperature  
in New York State.

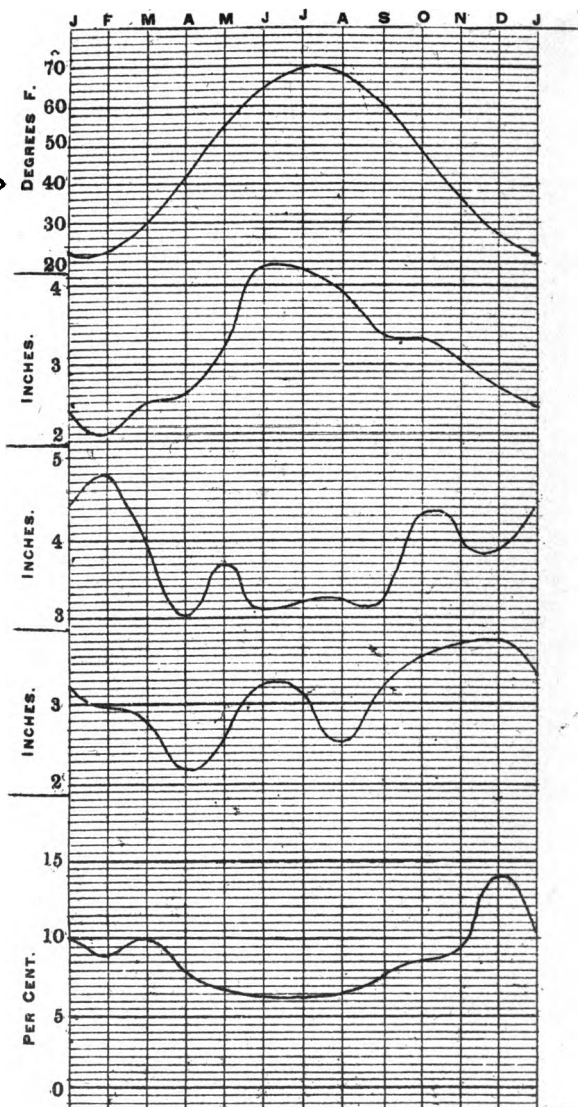
[The vertical lines represent the  
*middle* days of the respective  
months.]

Continental Fluctuation of Rainfall—  
Cooperstown.

Maritime Fluctuation of Rainfall—  
Block Island.

Combined Types.—Palermo, (Lake  
Region.)

Monthly Storm Frequency in percent-  
ages of the total yearly number.





Over the greater part of the interior of New York the precipitation during the winter is the least of the year. Block Island on the contrary has its annual maximum at that season, while the coast stations generally appear to be about equally subject to continental and maritime influences, showing but slight seasonal variations. This is also true, in even a greater degree, of the region bordering the Lower Lakes, and Rochester may be taken as an example in which an annual fluctuation is almost wholly lacking. Oswego has a principal maximum in June, and a secondary in autumn and early winter, but the latter becomes predominant at Palermo a few miles to the eastward, and attains a remarkable intensity along the ridge running parallel to the lake in Lewis county.

In the *spring* a March maximum is very pronounced at the Atlantic coast stations, and is also observable inland in a lesser degree. A diminution again occurs in April, after which the curves of the continental type rise towards their summer maximum, corresponding to the change of prevailing winds from northerly to southerly which occurs in May.

The distinction between a continental and maritime rainfall may admit of the following summary statement: Since precipitation is largely the result of an upward motion and consequent cooling of air masses, it will occur on the continents in summer when a high temperature renders diurnal convectional processes most active, and the prevailing winds also are such as to afford an abundant supply of vapor. Over or near large bodies of water, on the other hand, the daily convectional process is weak, and hence such regions are mainly dependent for their rainfall upon the powerful updraught of air within cyclonic storms. These conditions are sufficiently illustrated by the accompanying figures in which Cooperstown represents, approximately, the continental type, Block Island the maritime, and Palermo, in the Great Lake Region, a maritime type varied by a secondary summer maximum.

#### THE AMOUNTS OF ANNUAL RAINFALL

in different sections of the State are mainly determined, first by proximity to sources of vapor, or vapor-laden air currents; and secondary, by the character of local topography. In the case of New York State a more definite and substantially correct form of the latter statement is that, under similar conditions, the

precipitation is roughly proportional to the altitude of land surfaces. This rule does not apply to the central and southern Atlantic States, whose mountain ridges are *parallel* to the prevailing direction of vapor bearing winds.

As has been stated, the Atlantic Ocean furnishes the principal vapor supply of the northeastern States. While passing inland with easterly winds the moisture is, in the first place, largely precipitated over the mountains of New England, as is rendered apparent by the extraordinary rainfall on Mount Washington, averaging over 90 inches per annum. A similar effect is no doubt due to the Green Mountain system near the New York boarder; and hence the lowlands to the westward, including the Champlain and upper Hudson valleys receive a somewhat deficient supply as compared with that of the State as a whole. A marked increase of rainfall is again found in the Adirondack highlands, and beyond these a decrease in the St. Lawrence valley.

Sea-winds from the southeast find no obstruction on the immediate coast of New York; but passing inland meet the abrupt hill ranges of the southeastern counties, and probably give to each a copious rainfall as compared with that of the intervening valleys. Very few observations of rainfall have been made on the eastern side of these ridges; and the above statement rests mainly upon a two years record of the mountain station Minnewaska, which during that period obtained an excess of fourteen inches over the largest value at any low level station in the vicinity. Liberty, in the mountainous region of Sullivan County, also shows the direct influence of the sea wind both by its large annual precipitation and by a pronounced secondary maximum in winter; the latter feature disappearing at stations further northward.

Western New York receives an appreciable portion of its vapor supply from the Gulf of Mexico, judging from the frequent southwesterly direction of the rain-winds; and also from similarities existing between the rain types of the Lower Lakes and those of the Gulf and the Mississippi and Ohio valleys. The total precipitation over the depressed area occupied by the Lakes is rather below the average for the State; but wherever the surface rises abruptly from their shores the amount rapidly

increases and considerably exceeds that common to equal altitudes in the interior. The winter maximum appears prominently in a large snowfall over the southwestern highlands and still more so through a section including the hills of Lewis County, the upper Mohawk valley and an adjacent spur of the eastern highlands in Madison County.

The rainfall in Central New York is generally abundant, although somewhat less than that of the southeastern and southwestern highlands. A deficiency, as compared with the average for the State, exists in the principal valleys of the Susquehanna system and also in the depression of the Central Lakes.

No records exist to establish, even approximately, the amount of rainfall in the central Adirondack region. The brief series of observations obtainable from points near the eastern and western limits of the plateau have been carefully analyzed by comparison of individual monthly values with those of the adjacent stations in the Champlain and St. Lawrence valleys, the highlands showing a marked excess in all cases. The amounts of rain in the interior shown by the accompanying charts were estimated from the data of border stations, somewhat modified by the character of local topography.

#### THUNDERSTORMS.

Summer rains in New York occur to a large extent as thunderstorms, and generally the regions showing pronounced summer maxima are very subject to these electrical disturbances.

The summer of 1892 was remarkable for the frequent occurrence of thunderstorms over the northeastern States, and an investigation which was then undertaken with the aid of numerous voluntary observers has furnished information of value as bearing upon the distribution of rainfall over New York. A preliminary study of the data has shown, first, that thunderstorms develop most frequently in the broken or mountainous sections of the State, and especially in the highlands near the Pennsylvania border and Lake Erie, the Catskill and adjacent mountain ranges, and in the eastern portion of the Adirondack plateau. Regions of less frequent origination are found near the shore of Lake Ontario, in the St. Lawrence valley and on the Atlantic coast.



In all parts of the State the storms move in a generally easterly course, showing, however, considerable divergencies from this direction which are in some degree characteristic of different regions of the State. Thus, in western New York and the St. Lawrence valley the usual movement is toward the north of east, in the central part of the State nearly east, while in the Hudson and Champlain valleys, a southerly component is more frequently found. The average rate of motion of thunderstorms in this State is about thirty miles per hour; the maximum velocity thus far observed being about fifty miles per hour.

The storms which originate in the southwestern section appear in most cases to die out on the middle slopes of the western plateau, and do not often continue their course to the region of Lake Ontario. Hence, the region stretching from northern Erie county eastward to the lower ends of the Central Lakes is one of minimum storm frequency, and has a light annual rainfall. The central part of the eastern plateau, on the other hand, appears to derive a considerable proportion of its storms from the section south of the Central Lakes and near the Pennsylvania border. Disturbances originating in the Catskill and adjacent mountains usually move across or down the lower Hudson valley, which is therefore a region of great storm frequency; and similarly the storms of the eastern Adirondacks often pass to the St. Lawrence valley. The whole of the interior of the Adirondack region, with its high mountains and numerous streams and lakes, also appears very favorable for the development of thunderstorms, although a sufficient number of observations are still lacking.

#### SNOWFALL.

The data upon snowfall are very meagre for the State as a whole, and only the most general facts relating to the subject can be given here.

The following measurements of the total depth of snow falling each month during the three past winters are derived from the report of the New York Meteorological Bureau.

TABLE 25.  
TOTAL SNOWFALL DURING THREE WINTERS.

STATION.	County.	DEPTH IN INCHES AND TENTHS.		
		1889-90	1890-91	1891-92
<i>Western Plateau.</i>				
Humphrey .....	Cattaraugus .....	59.5	94.7	119.8
Alfred Centre .....	Allegany .....	28.7	*60.0	73.8
South Canisteo .....	Steuben .....	47.2	85.7	80.5
<i>Eastern Plateau.</i>				
Cooperstown .....	Otsego .....	37.2	110.0	59.5
Brookfield .....	Madison .....		145.0	88.5
Quaker Street .....	Schenectady .....		73.0	60.0
Waverly .....	Tioga .....	31.5	88.0	51.9
<i>Northern Plateau.</i>				
Constableville .....	Lewis .....	92.0	148.7	170.7
Number Four .....	Lewis .....	95.0	90.1	141.2
Saranac Lake .....	Franklin .....	*65.0		
<i>Atlantic Coast.</i>				
Setauket .....	Suffolk .....	21.5	16.5	17.0
<i>Hudson Valley.</i>				
Honeynead Brook .....	Dutchess .....	25.8	72.8	40.6
<i>Champlain Valley.</i>				
Plattsburgh .....	Clinton .....		61.9	62.1
<i>St. Lawrence Valley.</i>				
Canton .....	St. Lawrence .....	62.8	47.3	79.5
North Hammond .....	St. Lawrence .....	57.3		59.8
<i>Great Lakes.</i>				
Palermo .....	Oswego .....	38.0	40.5	54.7
Hess Roads .....	Niagara .....	30.2	49.3	60.3
<i>Mohawk Valley.</i>				
Utica .....	Oneida .....	85.0	165.0	151.6
<i>Central Lakes.</i>				
Ithaca .....	Tompkins .....	34.2	57.1	50.3
Geneva .....	Ontario .....	41.4	52.9	53.4

The average values for the three years indicate that substantially the same snow fall obtains over all of the highland regions of the State, with some exceptional cases of very heavy local amounts. The latter are found in the southwestern counties, especially in the vicinity of Lake Erie and in the tract which has previously been described as including portions of Lewis, Oneida and Madison Counties, where the total snow fall is generally the greatest to be found east of the Rocky Mountains. As stated in the preceding pages, the southeastern highlands are subject to a heavy precipitation in winter, and owing to the low mean temperature of the region this must fall largely as snow. The

\* One month interpolated.

winter maximum in the vicinity of the Atlantic coast is manifested in a larger percentage of heavy rains, as is true also in a lesser degree of the Great Lake region. The precipitation in the main portion of the Hudson and Champlain valleys is at a minimum in winter, as already stated, giving only a moderate snow fall for those regions.

The following table exhibits the average and extreme dates of the first snowfall at several representative points in New York. The data were obtained from the first series of Regents observations, 1826 to 1850, excepting in the case of Signal Service stations.

TABLE 26.  
FIRST SNOWFALL. AVERAGE AND EXTREME DATES.

STATION.	COUNTY.	Length of record.	AVERAGE DATE.		EARLIEST.		LATEST.	
			Month.	Day.	Month.	Day.	Month.	Day.
<i>Atlantic Coast.</i>								
East Hampton.....	Suffolk.....	16	Dec...	3	Nov...	14	Dec...	29
New York City (U. S.)...	New York.....	13	Nov...	16	Oct...	15	Jan...	4
Jamaica.....	Queens.....	23	Nov...	24	Nov...	4	Dec...	18
North Salem.....	Westchester....	19	Nov...	16	Oct...	4	Dec...	2
<i>Hudson Valley.</i>								
Kingston.....	Ulster.....	18	Nov...	19	Oct...	12	Dec...	15
Poughkeepsie.....	Dutchess.....	16	Nov...	20	Oct...	12	Dec...	17
Albany (U. S.).....	Albany.....	13	Nov...	3	Oct...	11	Nov...	22
<i>Great and Central Lakes.</i>								
Auburn.....	Cayuga.....	20	Nov...	2	Sept...	28	Dec...	17
Oswego (U. S.).....	Oswego.....	13	Oct...	25	Sept...	19	Nov...	13
Rochester (U. S.).....	Monroe.....	13	Oct...	29	Oct...	5	Nov...	13
Buffalo (U. S.).....	Erie.....	13	Oct...	25	Oct...	6	Nov...	13
Fredonia.....	Chautauqua....	17	Oct...	30	Oct...	14	Dec...	4
Erie, Pa. (U. S.).....	.....	13	Oct...	25	Oct...	6	Nov...	13
Ithaca.....	Tompkins.....	15	Nov...	3	Oct...	5	Dec...	16
<i>Mohawk Valley.</i>								
Utica.....	Oneida.....	21	Nov...	1	Sept...	28	Dec...	3
<i>Central Plateau.</i>								
Middlebury or Dale.....	Wyoming.....	17	Nov...	1	Sept...	27	Nov...	29
Hamilton.....	Madison.....	18	Oct...	15	Sept...	22	Nov...	12
Cazenovia.....	Madison.....	19	Oct...	26	Sept...	29	Nov...	23
<i>Northern New York.</i>								
Fairfield.....	Herkimer.....	17	Oct...	18	Sept...	28	Nov...	15
Lowville.....	Lewis.....	19	Oct...	29	Oct...	15	Dec...	19
Potsdam.....	St. Lawrence....	20	Oct...	30	Sept...	27	Nov...	26

NOTE.—Records designated (U. S.) were obtained at Signal Service Stations after 1873. Other records were obtained between 1826 and 1850.

### FREQUENCY OF RAINY DAYS.

The accompanying table shows the average frequency with which a rain or snow fall amounting to one one-hundredth of an inch or more occurs, during each month, at six stations in New

York and also at Block Island, R. I., and at Erie, Pa.; the former station representing, approximately, eastern Long Island and the latter southwestern New York. The rainy days are here expressed in percentages of the total number of days in each month, following the method of the Signal Service charts, from which the values at all stations excepting Ithaca were derived. The period of observation covers eighteen years at Buffalo, Rochester, Oswego and New York city, sixteen years at Erie, Pa., fifteen years at Albany, thirteen years at Ithaca and eight years at Block Island.

TABLE No. 27.  
*Percentage of Rainy Days.*

STATION.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total annual number.
Block Island, R. I. ....	47	44	39	35	38	33	36	29	29	35	39	41	135
New York city. ....	39	39	33	37	34	35	36	33	31	31	34	36	131
Albany. ....	45	43	44	40	40	41	39	31	34	35	43	44	146
Oswego. ....	55	49	40	39	37	36	52	26	35	46	56	55	153
Rochester. ....	65	58	57	43	38	39	37	33	38	47	53	61	171
Buffalo. ....	59	55	55	41	39	39	35	31	38	46	55	59	170
Erie, Pa. ....	65	58	57	44	39	41	33	32	41	51	57	65	178
Ithaca. ....	50	54	46	37	46	40	43	37	37	40	46	50	161

The probability of rain for all portions of the State may be fairly estimated from the averages at these stations, although some local variation must be expected, especially in summer, when local rains and thunderstorms are found to be quite unequally distributed over the State. It will be observed that precipitation occurs most frequently during the winter months at all stations, but, making due allowance for this general tendency, the number of rainy days is found to follow in a general way the fluctuations of the rain curves shown in plates 3 and 4, which fact may aid in the estimation of rain probability for various special localities. Thus, in the hilly regions of southern New York, the lower Hudson valley and the Adirondack highlands, summer rains are more frequent than at any station given in the table. Points at the eastern border of the region of Lake Ontario unite the summer with the winter maximum, and the station North Volney in this section has the unusual number of 189 rainy days during the average year, as stated by General A. W. Greely in "American Weather."

## CLOUDINESS.

The average or normal values of cloudiness for the State, like the estimates of rain-probability, must be based mainly upon the observations of the National Weather Service. A vast amount of data upon the subject was collected under the Regents' system of observation, from 1826 to 1863; and during the last decade of the series five of the records given in the accompanying table were obtained, by means of tri-daily observations. The methods used prior to 1850 were radically different from those employed in recent years, and hence the results of the two systems do not admit of comparison.

The accompanying tables show: (1) The average percentages of cloudiness (over-cast=100 per cent,) which obtain at eight National and five Regents stations, during each month; and (2) the number of clear, partly cloudy and cloudy days at the same National stations, with the exceptions of Burlington, Vt.

TABLE 28.  
PERCENTAGE OF CLOUDINESS. (OVERCAST = 100 PER CENT.)

STATION.	County.	Years' record	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Year.
Block Island, R. I.	.....	8	55	48	19	45	51	40	43	44	47	49	51	56	47.5
New York city	New York.	18	57	51	53	52	51	47	48	44	46	47	51	56	49.5
Liberty	Sullivan	10	63	63	60	57	49	47	44	45	43	52	51	56	54.0
Albany	Albany	15	60	57	61	58	53	48	48	50	50	58	60	66	56.0
Burlington, Vt.	.....	11	57	60	64	53	56	44	46	40	51	70	61	72	56.0
Hamilton College	Oneida	10	76	74	65	56	48	43	38	36	39	57	75	79	57.0
Homer	Cortland	13	76	76	68	61	54	60	47	45	50	61	61	66	63.0
Elmira	Chemung	8	66	62	54	54	47	53	45	45	45	55	55	55	55.0
Geneva	Ontario	10	71	69	62	58	48	48	42	41	52	55	80	74	57.0
Oswego	Oswego	18	81	74	69	56	51	49	47	47	52	65	86	86	63.0
Rochester	Monroe	18	80	70	69	56	50	48	45	44	50	60	77	83	61.0
Buffalo	Erle	18	77	66	64	56	56	48	48	44	50	60	74	81	62.4
Erle, Pa.	.....	16	77	66	64	55	53	48	48	44	50	60	74	81	62.4

**TABLE**

**NUMBER OF CLEAR, PARTLY CLOUDY (FAIR),**

STATION.	County.	JANUARY.			FEBRUARY.			MARCH.			APRIL.			MAY.		
		C	F	O	C	F	O	C	F	O	C	F	O	C	F	O
Block Island, R. L. ....		8.4	14.2	8.4	9.0	14.0	5.2	10.0	13.6	7.4	11.6	11.6	6.8	10.4	13.6	7.0
New York city. ....	New York. ....	7.6	12.1	11.3	7.8	11.0	9.5	7.3	13.8	9.9	8.2	12.0	9.8	9.3	13.2	8.5
Albany. ....	Albany. ....	5.7	12.7	12.6	7.2	10.8	10.2	6.3	13.1	11.6	8.1	11.3	10.6	9.2	13.3	8.5
Oswego. ....	Oswego. ....	1.1	7.1	22.8	3.1	8.5	16.6	3.9	11.1	16.0	6.7	10.6	12.7	9.1	12.3	9.6
Rochester. ....	Monroe. ....	1.3	8.8	20.9	3.1	11.4	14.1	3.7	11.6	15.7	7.4	10.3	12.3	8.7	13.0	9.3
Buffalo. ....	Erie. ....	1.3	9.4	20.3	4.5	10.6	13.2	4.9	12.7	13.4	6.5	11.7	11.8	9.1	12.2	9.7
Erie, Pa. ....		2.1	10.1	18.8	4.2	10.8	13.2	4.6	12.3	14.1	6.9	13.3	9.8	10.7	12.4	7.9

NOTE.—Periods of observation three years less

29.

## AND OVERCAST DAYS AT NATIONAL STATIONS.

JUNE.			JULY.			AUGUST.			SEPTEMBER.			OCTOBER.			NOVEMBER.			DECEMBER.			ANNUAL.		
C	F	O	C	F	O	C	F	O	C	F	O	C	F	O	C	F	O	C	F	O	C	F	O
13.4	12.0	4.6	12.4	14.6	4.0	9.6	16.8	4.6	12.0	12.3	5.7	11.0	11.7	8.3	8.8	12.5	8.7	6.8	14.7	9.5	124	161	80
8.3	14.9	6.8	7.9	15.8	7.3	9.8	12.5	8.7	10.1	11.7	8.2	10.4	12.7	7.9	8.8	11.4	9.8	6.0	13.5	11.5	101	155	109
9.3	12.8	7.9	9.2	14.7	7.1	11.5	12.7	6.8	9.9	11.8	8.3	7.9	12.3	10.8	4.4	11.1	14.5	8.8	11.3	15.9	92	148	125
8.6	12.8	8.6	9.1	14.9	7.0	9.7	13.3	8.0	7.5	12.0	10.5	5.3	10.3	15.4	1.3	6.4	22.3	0.7	5.5	24.8	66	125	174
9.2	12.4	9.4	8.6	15.0	7.4	10.1	13.4	7.5	8.4	13.0	8.6	6.5	11.1	13.4	2.4	9.0	18.6	0.9	6.7	23.4	66	136	163
8.4	13.6	8.0	9.1	15.7	6.2	10.3	14.0	6.7	8.7	12.6	8.7	6.7	10.3	12.6	2.3	9.2	18.5	0.7	8.2	22.1	73	141	151
9.9	13.2	6.9	10.4	15.3	5.3	11.3	13.8	5.9	9.3	12.2	8.5	7.5	9.2	14.3	1.9	8.6	19.5	1.4	6.8	22.8	80	138	147

than those given in table of percentages.



Chart 14 exhibits, approximately, the annual percentage of cloudiness for all sections of the State; the values for the Adirondack Region however being somewhat uncertain, as they depend wholly upon observations at border stations.

The main features of the map are based upon the averages given in the table, with such modifications as have been suggested by comparing and charting the results obtained by numerous voluntary observers during the past three years. The first series of Regents' observations were also found useful when compared among themselves.

The nearly uniform cloudiness over the State in summer is substantially the same in amount as that of the Great Lake Region and the north eastern States in general. It is about five per cent below the average of the middle Atlantic coast, and from ten to fifteen per cent above that of the Central States. In winter there is a general increase of cloudiness from the Gulf of Mexico northward, and especially in the region of the Ohio valley. The Great Lakes also become an important source of cloud formation at this season, the entire region from Lake Huron to western New York being subject to more than seventy per cent of overcast skies, which is the maximum amount for the United States, if a small portion of the northern Pacific coast be excepted. Eastward and southward from the Central Lakes the cloudiness decreases, and on the Atlantic coast the amount is over twenty per cent below that of the Great Lake Region.

There are many interesting and peculiar features of cloud distribution within New York; but local observations, still inadequate in most cases, have not been sufficiently discussed for publication.

#### HUMIDITY.

The following values of Relative Humidity (or percentage of moisture relative to saturation) were derived from observations at seven stations of the Signal Service from the opening of the stations (in 1871 in most cases) to 1886.

TABLE No. 30.  
*Relative Humidity (Per Cent).*

STATION.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Year.
Block Island, R I.....	76	78	75	76	88	88	82	82	82	79	78	79	79
New York city.....	74	73	68	65	66	69	71	72	72	70	70	73	70
Albany.....	75	74	71	63	62	66	67	68	72	72	74	76	70
Oswego.....	74	74	73	68	67	70	71	71	71	71	71	76	71
Rochester.....	80	77	76	67	64	67	68	68	70	72	76	80	72
Buffalo.....	89	78	75	71	68	71	72	71	72	73	76	79	74
Erie, Pa.....	79	78	76	70	66	70	70	70	72	72	75	79	78

Although the absolute amount of moisture in the air is least during the winter, the percentage relatively to saturation (the relative humidity) is then generally at a maximum. At Block Island, however, the northerly winter winds have traversed a lesser expanse of water surface than the southerly or ocean winds of summer, and this circumstance, with the more moderate degrees of heat and cold to which the island is subject, reverses the rule applying to inland stations, causing the maximum humidity to occur during the summer. This is the case also along the south shore of New England and probably over the greater part of Long Island.

The maximum humidity at the Weather Bureau Stations within the State is found at Buffalo, which is subject to prevailing winds from the Lake. The region of least moisture, on the other hand, appears to be the Champlain valley, as shown by a two years' record at Plattsburgh. The conditions are here very dissimilar to those of stations at the same latitude in the St. Lawrence valley, the latter region showing substantially the same humidity which obtains near the Great Lakes.

Definite values of the relative humidity at stations of the State Service are omitted here, owing both to the brevity of their records and to the fact that the hours and methods of observation generally employed by voluntary observers give results which can only be compared with those of the National Service by taking full account of the manner of observation in each case. In the course of preparation of this paper a careful

examination was made of the records of humidity published by the State Bureau; but, aside from the facts mentioned regarding the Champlain and St. Lawrence valleys, no local peculiarities in the distribution of moisture were found of a sufficiently marked character to warrant publication until more extended observations can be obtained. In general, there appears to be the usual slight increase of humidity with altitude over the plateau regions, in summer; but otherwise, the values given for the Signal Service stations may be considered to hold true also throughout the adjacent territory.

## GENERAL CLIMATIC DATA AND NOTES.

### RESUMÉ OF CLIMATIC ELEMENTS AT NEW YORK CITY.

(Values derived from U. S. Weather Bureau records, unless otherwise specified.)

**NORMAL TEMPERATURES:** Annual, 51.6°; January, 30.6°; July, 73.4°.

**Maxima:** Average of annual maxima, 94°; highest .....  $\left\{ \begin{array}{l} 100^{\circ} \text{ in } 1881, \text{ U. S. station.} \\ 101^{\circ} \text{ in } 1881, \text{ Central Park.} \\ 104^{\circ} \text{ in } 1825, \text{ Fort Columbus.} \end{array} \right.$

**Minima:** Average of annual minima, +1°; lowest .....  $\left\{ \begin{array}{l} -6.0^{\circ} \text{ in } 1875 \text{ and } 1880, \text{ at U. S. station.} \\ -6.0^{\circ} \text{ in } 1880 \text{ and } 1882, \text{ at Central Park.} \\ -12.0^{\circ} \text{ in } 1846, \text{ at Fort Columbus.} \end{array} \right.$

**Daily variations:** Mean daily range: Greatest, 17.0°, in June; least, 13.2°, in December. Daily periodic change, or amplitude, greatest, 11.4°, in June; least, 6.7°, in December. Average variability of successive daily means, in January, 6.5°.

**PRECIPITATION:** Average annual, 45.31 inches; greatest average monthly, 4.77 inches, in August; least average monthly, 3.05 inches, in May.

**Number of rainy days:** Greatest, 89 per cent, in January and February; least, 81 per cent, in September and October.

**Cloudiness:** Annual percentage, 5.05, greatest, 57 per cent, in January; least, 46 per cent, in September.

No. clear days, year..	101.0	No. p'tly cl'dy d'ys, year...	155.0	No. cloudy days, year...	109.0
No. clear days, Jan ..	7.6	No. p'tly cl'dy d'ys, Jan ...	12.1	No. cloudy days, Jan ...	11.3
No. clear days, Sept..	10.1	No. p'tly cl'dy d'ys, Sept ..	11.7	No. cloudy days, Sept...	8.3

**Mean relative humidity:** Annual, 70 per cent; greatest, 74 per cent, in January; least, 65 per cent, in April.

**Average date of first snow,** November 16th; **average date of first killing frost,** November 5th; **average date of last killing frost of spring,** April 18th.

**Average velocity of the wind** in miles, per hour:

Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
11.0	11.4	11.6	8.9	7.9	7.7	7.4	7.3	8.0	9.5	10.1	10.9	9.30

### RESUMÉ OF CLIMATIC ELEMENTS AT ALBANY.

**NORMAL TEMPERATURES:** Annual, 48.4°; January, 23.0°; July, 73.6°.

**Maxima:** Average of annual maxima, 93°; highest .....  $\left\{ \begin{array}{l} 98^{\circ} \text{ in } 1890, \text{ U. S. station.} \\ 100^{\circ} (?) \text{ in } 1830, \text{ private record.} \end{array} \right.$

**Minima:** Average of annual minima, -11°; lowest ....  $\left\{ \begin{array}{l} -18^{\circ} \text{ in } 1875 \text{ and } 1878, \text{ U. S. station.} \\ -23^{\circ} \text{ in } 1840, \text{ Regents' series.} \end{array} \right.$

**Daily variations:** Mean daily range, greatest, 17.9°, in June; least, 12.9°, in December. Periodic change, or amplitude, greatest, 14.6°, in July; least, 5.5°, in December. Average variability of successive daily means in January, 7.6°.

**PRECIPITATION:** Average annual, 38.80 inches; greatest average monthly, 4.18 inches, in July; least average monthly, 2.54 inches, in February.

**Number of rainy days:** Greatest, 45 per cent, in January; least, 31 per cent, in August.

**Cloudiness:** Annual percentage, 56.0; greatest, 70 per cent, in December; least, 48 per cent, in June and July.

No. clear days, year.. 92.0	No. p'tly cl'dy d'ys, year... 148.0	No. cloudy days, year... 125.0
No. clear days, Dec.. 3.8	No. p'tly cl'dy d'ys, Dec... 11.3	No. cloudy days, Dec... 15.9
No. clear days, June.. 9.3	No. p'tly cl'dy d'ys, June.. 12.8	No. cloudy days, June.. 7.9

**Mean relative humidity:** Annual, 70 per cent; greatest, 76 per cent, in December; least, 63 per cent, in May.

**Average date of first snow,** November 3d; **average date of first killing frost,** October 28d; **average date of last killing frost of spring,** April 13th.

**Average velocity of the wind** in miles, per hour:

Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
6.7	7.1	7.8	6.7	6.2	5.9	5.6	5.0	5.2	6.1	7.0	7.0	6.35

## RESUMÉ OF CLIMATIC ELEMENTS AT ROCHESTER.

**NORMAL TEMPERATURE:** Annual, 46.8°; January, 24.1°; July, 70.5°.

**Maxima:** Average of annual maxima, 92°; highest { 98° in 1881, U. S. Record.  
102° in 1845, Regents' and private records.

**Minima:** Average of annual minima, -6°; lowest. { -12° in 1873 and 1875, U. S. records.  
-14° in 1861, Regents' and private records.

**Daily variations:** Mean daily range, greatest, 19.5°, in June; least, 14.5°, in January. Daily periodic change, or amplitude, greatest, 12.5°, in June; least, 4.0°, in December. Average variability of successive daily means in January, 7.4° (approximately).

**PRECIPITATION:** Average annual, 35.06 inches; greatest average monthly, 3.32 inches, in June; least average monthly, 2.43 inches, in September.

**Number of rainy days:** Greatest, 65 per cent, in January; least, 32 per cent, in August.

**Cloudiness:** Annual percentage, 61.0; greatest, 83 per cent, in December; least, 44 per cent, in August.

No. clear days, year.. 66.0	No. p'tly cl'dy d'ys, year... 136.0	No. cloudy days, year.. 163.0
No. clear days, Dec.. 0.9	No. p'tly cl'dy d'ys, Dec... 6.7	No. cloudy days, Dec.. 23.4
No. clear days, Aug.. 10.1	No. p'tly cl'dy d'ys, Aug.. 13.4	No. cloudy days, Aug.. 7.5

**Mean relative humidity:** Annual, 72 per cent; greatest, 80 per cent, in January and December; least, 64 per cent, in May.

**Average date of first snow,** October 29th; **average date of first killing frost,** October 16th; **average date of last killing frost of spring,** May 5th.

**Average velocity of the wind** in miles, per hour:

Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
13.8	12.7	12.2	11.2	10.0	8.8	8.0	7.9	9.4	10.4	11.8	12.1	10.68

## RESUMÉ OF CLIMATIC ELEMENTS AT BUFFALO.

**NORMAL TEMPERATURE:** Annual, 46.3°; January, 24.1°; July, 69.9°.

**Maxima:** Average of annual maxima, 88°; highest, 94°, in 1867.

**Minima:** Average of annual minima, -4°; lowest, -16°, in 1875.

**Daily variations:** Mean daily range, greatest, 15.4°, in May; least, 12.2°, in December. Daily periodic change, or amplitude, greatest, 10.3°, in August; least, 3.7°, in December. Average variability of successive daily means, 7.4° (approximately).

**PRECIPITATION:** Average annual, 38.14 inches; greatest average monthly, 3.93 inches, in October; least average monthly, 2.48 inches, in April.

**Number of rainy days:** Greatest, 59 per cent, in January and December; least, 31 per cent, in August.

**Cloudiness:** Annual percentage, 62.4; greatest, 81 per cent, in December; least, 44 per cent, in August.

No. clear days, year.. 73.0	No. p'tly cl'dy d'ys, year... 141.0	No. cloudy days, year.. 151.0
No. clear days, Dec.. 0.7	No. p'tly cl'dy d'ys, Dec... 8.2	No. cloudy days, Dec.. 22.1
No. clear days, Aug.. 10.3	No. p'tly cl'dy d'ys, Aug... 14.0	No. cloudy days, Aug.. 6.7

*Mean relative humidity:* Annual, 74 per cent; greatest, 80 per cent, in January; least, 68 per cent, in May.

*Average date of first snow,* October 25th; *average date of first killing frost,* October 15th; *of last killing frost of spring,* April 30th.

*Average velocity of the wind in miles, per hour:*

Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
14.8	18.5	11.8	9.7	9.1	8.6	8.3	8.6	9.1	10.6	13.5	14.0	10.98

## V. HISTORICAL NOTICES OF THE WEATHER IN AND NEAR NEW YORK.

The following statements are derived mainly from *Blodgett's Climatology of the United States*; and from the statistics presented by Mr. J. C. Smock in the *Climate of New Jersey*. (Data from the former source are designated by the reference (B) and from the latter by (S).)

1717. In 1717, the "great snow" occurred, which is often mentioned in New England History of that date. It continued for several days, Feb. 19th to 24th, and remained five or six feet deep on a level at Boston, and over all the settled parts of New England. This winter is the most conspicuous, if not the only one noted for extreme cold prior to 1740. (B.)

1740. The winter of 1740-41 was distinguished both in the United States and Europe for intense cold. Jefferson speaks of it as having been in Virginia only less severe than that of 1779-80. The *Boston News Letter* of Mch. 5th says: "We hear from Stratford, Conn., that the Sound is frozen over three leagues across, so that people ride every day thence to Long Island." In a subsequent number a certificate of several persons appears testifying that they had crossed the Connecticut River on the ice and with horses, on the first of April. (B.)

The following is from the diary of Col. A. Hasbrouck of Kingston, N. Y., extracts from which were published in a recent issue of the New York Times. "In the year of our Lord 1740-41, that winter began the beginning of December, and continued to the last of March, 1741, and we rode over Hudson's River with horses and sleighs \* \* \* to the 20th of March."

1754-5. Winter unusually mild. Troops sailed from New York to Albany in January and February. (S.)

1780. In 1780 the most signal and severe depression of temperature occurred belonging to our entire history, excepting, perhaps, that of 1856 \* \* \* Webster remarks an immense

snowfall in New England; "for six weeks no snow melted. The Sound was entirely covered with ice between Long Island and the main, and between New York and Staten Island." (B.)

"The winter began the beginning of December 1779, and continued to the latter end of March, 1780. A very deep snow above three feet and more, and driven up in heaps in many places six and seven feet high \* \* \* and so severe a cold for most part of the winter that the like has never been known by the oldest living in this country, and continued to near the latter end of March, 1780." "People did ride with horses and sleighs from New York to Staten Island, \* \* \* and from New York to Paulus Hook and Bergen and also to Long Island, and did ride upon the ice from New York to Albany, and further, and also crossed the Sound upon ice from New London to Long Island with carriages of burden, which has never been known to have been done before. The snow was not as deep as in the hard winter, so-called, in the years 1740-41, but much colder and of longer continuation." (Hasbrouck.)

1784-5. "The winter began about the middle of December, 1784, and continued to the 15th of April, 1785, so that the fields were yet covered with snow and people rode across the Hudson River at the mouth of Rondout Kill the 5th day of April, 1785, with horses and sleighs upon the ice, and men walked across upon the ice until the 9th of April." (Hasbrouck.)

1805-6. An open winter; Hudson River free from ice February 20th. (S.)

1810. Hudson River open until January 19th. (S.)

1812-16. From May to September, 1812, each month was from 3.6 degrees to 7.2 degrees below the average (at Cambridge, Mass.) \* \* \* a refrigeration equaled for two months only, June and July of 1816, which were 5 degrees and 5.8 degrees below. In the Northern States snows and frosts occurred in every month of both summers; Indian corn did not ripen; fruits and grains were greatly reduced in quantity or wholly cut off. \* \* \* In England, 1816 was almost as extreme as in the United States. (B.)

1820-21. In New York the winter of 1820-21 was also "one of the four during a century in which the Hudson between Paulus Hook and New York was crossed on the ice. (Caldwell.)" (B.)

1826-35. "On February 22d, 1826, mercury solidified at Plattsburgh, N. Y., a condition requiring a reduction to  $-40\frac{1}{2}$  degrees, and in January, 1835, mercury froze at Lebanon, N. Y." (Hildreth.) "In the winter of 1835-36 the thermometer was below zero on twenty-six days." (Fisk.) In many parts of New England snow remained uninterruptedly from December until May. \* \* \* Long Island Sound was closed by ice. "The summer months of 1835 were nearly as severe as those of 1812 and 1816." (B.)

1852. In January the East River at New York was closed and crossed on the ice on the 20th and for three days following. (B.)

1853. A warm year \* \* \* winter of 1852-53 one of the warmest on record and very wet, the winter rainfall at Newark having been 15.85 inches. (S.)

1856. In 1856 a period of severe cold continued for nearly three months, the greatest refrigeration occurring between the 25th and 28th parallels. Long Island Sound was closed to navigation from January 25th to February 27th and the harbor of New York was much obstructed by ice, which several times made temporary communication across the East River. (B.)

1857. An excessively cold January and summer. On January 24th the temperature at Troy was  $-33$ .

(It has been remarked that it is impossible to use the state of the rivers and harbors at the present time as any measure of the relative strength of cold, when compared with early records, owing to the breaking up of the ice now effected by steam craft.)

Mr. John Hulburt of Arkport, Allegany County, N. Y., has kindly furnished the writer with extracts relating to the weather from a journal kept by him continuously since 1846. The following notes will be of interest here:

1841 The first fall of snow for the year was on April 20th-21st.

1842. An open winter and early spring. \* \* \* Frost June 1st, killed all fruit.

1843. Snow fully three feet deep in woods.

1844. A very prolific year.

1845. May 30th, ice three-fourths inch thick.

1846. Winter very cold, deep snow which lay on till March. Killing frost May 22d, corn replanted, giving a fine crop.

1847. A very cold and backward year. Not a leaf to be seen on May 1st. A fine fruit year.

1849. On the 28th of December two feet of very wet snow fell, blockading all roads. Sleighing remained until March.

1850. Hard snow storm May 28th, and very cold. \* \* From July 14th to August 9th, rain fell every day. All the wheat sprouted in shock. No such harvest weather known about here before or since.

1851. Cold and fair; sleighing all winter.

1852. June 5th corn all cut down by frost; ice one-quarter inch thick.

1853. The summer of 1853 was noted for the "*great drought*;" no rain to speak of for three months, May, June and July. No frost from April to September 29th. The winter of 1853-4 was remarkably mild, with only two weeks sleighing.

1854. For twelve days in July the mercury stood at 95 degrees and over in the shade, and for eighteen days it was over 90 degrees. That was the hottest summer I ever knew. \* \* \* It was followed by a cold fall and early snow.

1855. The "heated term" of '54 was followed by a remarkably cold February, the mercury falling below zero fourteen mornings out of the twenty-eight, and fine sleighing till March 6th.

1856. Opened cold and kept it up all winter and well into April. (Sleighing) good from January 5th to April 3d. On the latter date I find this record "south wind and rain, the first drop in 100 days." Several times that winter the mercury was 30 degrees below zero; the 14th of February, 32 degrees below. It was a winter long to be remembered for extreme cold. August was very cool and September very warm till the 29th.

1857-58. Plows ran in January, in fact some farmers about here plowed every month that winter.

1859. January and February were noted for absence of snow and mild weather; roads very dry all through March and much plowing done. On April 23d I find this record: "Snowed hard all day, and wind blew a hurricane—more snow fallen to-day than all winter,—and plump eight inches deep to-night." May 7th, 90 degrees at 2 p. m., a remarkably warm month. June 4th,



cold, with rain and snow; June 5th, ice one-quarter inch thick. The forest leaves were almost full size, and before noon were a butternut color. Early wheat and corn cut down. Another hard freeze on the 11th and a still harder one on the 12th, but nothing left to kill.

1860. A mild winter, plowing all done in April.

1861. August 2d, thermometer at sunrise 80 degrees, 94 degrees at noon, 100 degrees at 2 p. m.; the warmest day I ever saw. A remarkably warm fall; December 9th and 10th thermometer at 80 degrees.\* Sheep in pasture till December 21st, which is unprecedented.

1862. The record of April 1st is: An immense body of heavy snow on ground two feet deep; three months good sleighing.

1863. Very hot and wet summer; fine crops.

1864. Very hot and dry in July.

1865. Cherries in full bloom April 27th. A warm and dry summer.

1865-6. No snow to make sleighing.

1867. One foot of snow January 20th remained till March. Rain fell on twenty-eight days in May. Summer months fine for grain — wheat never better.

1868. The average temperature for July the highest I ever knew. No rain to reach potatoes till August 20th.

1868-9. Good sleighing all winter, and until March 24th. Coldest summer and most rain I ever knew. The coldest November on record.

1870. Thermometer at 0 degree but three mornings all winter. Only ten days sleighing. A very warm spring and summer. Plowing till December 16th.

1871. February 5th, 30 degrees below zero at 6 A. M. and 10 degrees below all day. Early spring.

1872. Great drouth in May, and very hot and dry all through June.

1874. A very open winter, with but little snow. Temperature below zero several days in April. A hot summer followed.

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\*The temperature on these dates were remarkably high throughout New York, the maximum noted at stations of the Regents' system being 64 degrees.— *Ed.*

1875. Begins with thermometer at zero and keeps very cold all winter. Ice houses all filled after March 20th with ice over two feet thick. Year closed with the thermometer at 80 degrees.\*

1876. New Year's day the warmest on record.\* No snow till February 15th, and then only a flurry. Very warm in July and up to August 21st.

1877. January 14th: "Scarcely a day since Christmas that it has not snowed; snow four feet deep in the woods, and very solid. A great many roofs falling in." A fine year for corn.

1878. A very warm March. Cherries in bloom April 23d.

1879. Cold winter and good sleighing. Cold, backward spring.

1881. Cold until the middle of April. Very dry until October, and then very wet and warm balance of year.

1882-83. Heavy snow storm November 26th, lies on all winter; very cold and backward spring.

1884. From August 4th till 21st the thermometer was 90 degrees and over every day. December closes very warm.

1885. April 1st: "My thermometer has marked zero and below forty-five times since January 1st." May was a warm, lovely month.

1885-6. A remarkably mild winter; plowing mostly completed in March.

1887. Fine, open winter, no sleighing. A hot July on an average, but winter clothing necessary on the 10th. Very open weather until the middle of December.

1888. A very mild winter; severe blizzard on March 12th and 13th.

1889. A mild January and very changeable weather in February. Grain all sowed in March. May 29th, thermometer 26 degrees; grass, garden stuff and potatoes all cut down. June 1st, water two feet higher than I ever saw it on the Canisteo River and another flood June 17th.

1890. The year opens warm, and January closes with a temperature of 68 degrees (the temperature obtained also at the Weather Bureau station at Erie, Pa. *Ed.*). The warmest and wettest winter on record; not a sleigh seen all winter.

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\* Maximum temperature at Ithaca on December 31, 1875, was 59 degrees; January 2, 1876, 64 degrees.

1891. A winter of frequent rain and snow.

1892. Good sleighing nearly all winter. A remarkably fine year for farmers.

The following remarks of Dr. J. Hyatt, of Dutchess County, have a bearing upon the question, "Is our climate changing?": "It is important to note that killing frosts and all sorts of quick or extensive ranges of temperature or precipitation (including, perhaps in a lesser degree, pressure changes) have greatly increased within my own adult experience of fifty-five years, and that these injurious effects have advanced in full proportion, if not more, with *deforestation*. In this locality there is not more than one-half the tree and forest growth standing, compared with what existed fifty-five years ago."

## VI. DERIVATION OF TEMPERATURE AND RAINFALL NORMALS.

The temperature and rainfall data given in the preceding pages were derived from the following sources:

1. Observations taken at various academies of the State between the years 1826 and 1868, under the supervision of the Board of Regents of New York. The results were published in two volumes, the first covering the period 1826-1850 and the second from 1850-1868.
2. Monthly and annual normals given in Nos. 277 and 353 of the "Smithsonian Contributions to Knowledge," published in 1876 and 1881. The data presented in these works were derived by Mr. C. A. Schott from all available sources, including the first series of New York Regents Reports, the records taken under the supervision of the Smithsonian Institution, the U. S. Army and the U. S. Patent Office.
3. Records of stations of the National Signal Service and Weather Bureau.
4. The reports of the New York State Meteorological Bureau, issued monthly, 1889-1892, from Cornell University.
5. Miscellaneous records published in the United States Weather Review or furnished to the writer by independent observers.

### TEMPERATURE NORMALS.

Owing to the large differences which obtain between the temperature of the same month in successive years, reliable

average or normal values can be derived only from records extending over a long period. Such records are not numerous in this State; and few of those which exist have been obtained under precisely the same circumstances from first to last. Satisfactory values can, however, be determined for a few points in various sections of the State and the normals of adjacent stations may be derived from these by comparing the shorter with the longer records month by month, since the *differences* between the temperatures at adjacent stations are much more constant than the temperatures themselves. But before using this method it is necessary to ascertain the limits of distance within which the temperatures have a similar variation, especially in a region situated, like New York, near the usual path of storms. For example, a cyclonic depression passing south of this State may give a warm wave over the southern counties, while anticyclonic conditions and extreme cold prevail in the northern section. Further, the inversion of temperature, or decrease with height, occurring within anticyclonic areas, is frequently the source of deviation from the usual thermal relations between highland and valley stations.

TABLE No. 31.  
*Variability of Monthly and Annual Mean Temperature.*

STATIONS.	Latitude N.	Longitude W.	Year's record.	MEAN VARIABILITY IN DEGREES FAHREHNEIT.					PROBABLE ERROR OF MEAN OR NORMAL.				
				January.	February.	July.	August.	Year.	January.	February.	July.	August.	Year.
				Deg. 4.3	Deg. 4.3	Deg. 2.6	Deg. 2.1	Deg. 1.1	Deg. 0.80	Deg. 0.80	Deg. 0.40	Deg. 0.38	Deg. 0.30
1. Potsdam.....	44 40	76 01	21	4.3	4.3	2.6	2.1	1.1	0.80	0.80	0.40	0.38	0.30
2. Lowell.....	43 47	75 39	20	4.3	4.0	1.8	1.4	0.8	0.80	0.63	0.30	0.25	0.18
3. Rochester.....	43 08	77 43	21	3.8	3.8	1.2	1.6	1.4	0.71	0.70	0.23	0.23	0.27
4. Lewiston.....	43 11	79 04	17	3.5	3.6	2.0	1.8	1.5	0.73	0.74	0.41	0.37	0.31
5. Cazenovia.....	43 56	75 54	20	3.7	4.0	1.6	1.3	1.0	0.71	0.76	0.31	0.25	0.19
6. Coopers town.....	43 41	74 57	38	4.4	4.0	2.4	2.3	1.0	0.59	0.54	0.40	0.37	0.16
7. Fredonia.....	42 27	79 21	18	3.6	4.5	2.0	2.2	1.0	0.74	0.93	0.41	0.45	0.30
8. Flatbush.....	40 40	73 56	24	3.4	3.7	1.4	1.4	1.1	0.57	0.63	0.24	0.24	0.19
9. Central Park.....	40 44	74 00	23	3.7	3.2	1.8	1.9	1.1	0.68	0.58	0.23	0.25	0.20
Mean of 3, 6 and 9.....	.....	.....	....	4.0	3.7	1.8	1.9	1.2	.....	.....	.....	.....	.....

TABLE No. 32.  
*Variability of Temperature Differences.*

PAIRS OF STATIONS.	Number of Years compared.	Distances between stations.	Difference of elevation.	VARIABILITY OF TEMPERATURE DIFFERENCES.					PROBABLE ERROR OF MEAN TEMPERATURE DIFFERENCES.				
				January.	February.	July.	August.	Year.	January.	February.	July.	August.	Year.
		Miles.	Feet.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.
1. Flatbush — Jamaica.	24	8	24	1.1	0.9	0.9	1.0	0.8	0.19	0.16	0.17	0.18	0.14
2. Albany — Kinderhook.	17	20	5	0.7	0.7	0.7	0.5	0.4	0.14	0.15	0.16	0.11	0.08
3. Rochester — Oswego.	7	63	317	0.7	0.8	0.4	0.3	0.3	0.24	0.28	0.14	0.10	0.10
4. Rochester — Buffalo.	18	66	70	0.4	0.6	0.6	0.6	0.5	0.06	0.13	0.13	0.12	0.10
5. Rochester — Ithaca.	13	75	230	0.8	0.6	0.7	0.6	0.3	0.18	0.30	0.17	0.16	0.08
6. Rochester — Gouverneur.	10	140	330	2.5	1.0	1.1	1.9	0.6	0.66	0.37	0.33	0.47	0.16
7. Flatbush — Potadam.	21	275	260	2.4	2.1	1.9	1.7	1.1	0.44	0.40	0.37	0.33	0.30
8. Ithaca — Cooperstown.	11	83	450	0.9	1.0	0.7	0.9	0.4	0.34	0.35	0.18	0.24	0.10
9. Pompey — Cazenovia.	13	10	600	0.7	1.2	0.8	1.4	0.6	0.17	0.33	0.17	0.34	0.16
10. Pompey — Cherry Valley.	13	68	550	1.3	1.4	1.5	1.3	0.4	0.33	0.34	0.36	0.33	0.10
11. Central Park — Rochester.	21	360	534	1.2	1.3	1.5	1.3	0.8	0.31	0.33	0.36	0.33	0.16
12. Central Park — Cooperstown.	23	150	1,303	1.1	1.5	1.4	1.3	0.5	0.19	0.35	0.34	0.31	0.08
13. Central Park — Burlington, Vt.	23	270	303	1.3	1.6	1.6	1.4	0.6	0.28	0.34	.....	.....	.....

TABLE No. 31.  
*Variability of Monthly and Annual Mean Temperature.*

STATIONS.	Latitude N.	Longitude W.	Year's record.	MEAN VARIABILITY IN DEGREES Fahrenheit.					PROBABLE ERROR OF MEAN OR NORMAL.				
				January.	February.	July.	August.	Year.	January.	February.	July.	August.	Year.
				Deg. 4.3	Deg. 4.3	Deg. 2.6	Deg. 2.1	Deg. 1.1	Deg. 0.80	Deg. 0.80	Deg. 0.40	Deg. 0.38	Deg. 0.30
1. Potsdam.....	44 40	75 01	31	4.3	4.3	2.6	2.1	1.1	0.80	0.80	0.40	0.38	0.30
2. Lowell.....	43 47	75 39	20	4.3	4.0	1.8	1.4	0.8	0.80	0.63	0.30	0.25	0.18
3. Rochester.....	43 08	77 42	21	3.8	3.8	1.2	1.6	1.4	0.71	0.70	0.28	0.32	0.27
4. Lewiston.....	43 11	79 04	17	3.5	3.6	2.0	1.8	1.5	0.73	0.74	0.41	0.37	0.31
5. Casanovia.....	42 56	75 54	20	3.7	4.0	1.6	1.3	1.0	0.71	0.76	0.31	0.25	0.19
6. Coopers town.....	42 41	74 57	38	4.4	4.0	2.4	2.3	1.0	0.59	0.54	0.40	0.37	0.16
7. Fredonia.....	42 27	79 21	18	3.6	4.5	2.0	2.2	1.0	0.74	0.83	0.41	0.45	0.20
8. Flatbush.....	40 40	73 56	24	3.4	3.7	1.4	1.4	1.1	0.57	0.63	0.24	0.24	0.19
9. Central Park.....	40 44	74 00	23	3.7	3.2	1.8	1.9	1.1	0.68	0.53	0.33	0.35	0.20
Mean of 3, 6 and 9.....	.....	.....	....	4.0	3.7	1.8	1.9	1.2	.....	.....	.....	.....	.....

TABLE No. 32.  
*Variability of Temperature Differences.*

PAIRS OF STATIONS.	Number of years compared.	Distances between stations.	Difference of elevation.	VARIABILITY OF TEMPERATURE DIFFERENCES.					PROBABLE ERROR OF MEAN TEMPERATURE DIFFERENCES.				
				January.	February.	July.	August.	Year.	January.	February.	July.	August.	Year.
		Miles.	Feet.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.	Deg.
1. Flatbush — Jamaica.	24	8	24	1.1	0.9	0.9	1.0	0.8	0.19	0.16	0.17	0.18	0.14
2. Albany — Kinderhook.	17	20	5	0.7	0.7	0.7	0.5	0.4	0.14	0.15	0.16	0.11	0.08
3. Rochester — Oswego.	7	63	317	0.7	0.8	0.4	0.3	0.3	0.34	0.28	0.14	0.10	0.10
4. Rochester — Buffalo.	18	66	70	0.4	0.6	0.6	0.6	0.5	0.08	0.12	0.12	0.12	0.10
5. Rochester — Ithaca.	13	75	230	0.8	1.0	0.7	0.5	0.3	0.18	0.20	0.17	0.16	0.08
6. Rochester — Gouverneur.	10	140	230	2.5	1.0	1.1	1.9	0.6	0.66	0.37	0.32	0.47	0.16
7. Flatbush — Potsdam.	21	275	260	2.4	2.1	1.9	1.7	1.1	0.44	0.40	0.37	0.33	0.30
8. Ithaca — Cooperstown.	11	83	450	0.9	1.0	0.7	0.9	0.4	0.54	0.36	0.18	0.24	0.10
9. Pompey — Cazenovia.	13	10	600	0.7	1.2	0.8	1.4	0.6	0.17	0.32	0.17	0.34	0.16
10. Pompey — Cherry Valley.	13	68	550	1.3	1.4	1.5	1.3	0.4	0.32	0.34	0.36	0.32	0.10
11. Central Park — Rochester.	21	360	534	1.2	1.3	1.5	1.3	0.8	0.21	0.22	0.36	0.36	0.16
12. Central Park — Cooperstown.	23	150	1,303	1.1	1.5	1.4	1.2	0.5	0.19	0.26	0.34	0.21	0.08
13. Central Park — Burlington, Vt.	33	270	1,803	1.3	1.6	...	...	...	0.33	0.34	...	...	...



In order to obtain a numerical expression of the reliability of the normals as derived both from independent records and by comparison with adjacent stations, a method developed and extensively used by Dr. J. Hann was employed; the results of the computations appearing in tables 31 and 32. The mean variability of temperature, as shown in table 31, is the average difference between monthly or annual *normals* and the individual values from which the normals are derived. In the same way, table 32 gives the average variability to which the temperature *differences* between several pairs of stations are subject.

To determine the probable error of the *means* or normals obtained from data subject to the given degrees of variation, the following modification of Peters' formula\* is used:  $r_m = .845 \frac{V}{\sqrt{n-1}}$ ;

where  $r_m$  is the probable error of the mean of normal,  $V$  is the average deviation from the mean value, or the variability; and  $n$  is the number of years covered by the record.

The maximum variability of means was found by a trial of several records to be fairly represented by the values for January and February, and the minimum by those of July and August. The character of the variation of *differences* is also best indicated by the midsummer and midwinter rates, and hence only the above four months and the year are included in the tables. It will be seen that the normal of Cooperstown, whose record is the longest of the series, is liable to errors amounting to 0.6 degrees in winter and 0.4 degrees in summer; while at the remaining stations the uncertainty is considerably greater than at Cooperstown during the winter months. In several cases, however, errors of observation, or in the published records, undoubtedly affect the results to some degree; hence the average variability at the foot of the table is derived from three stations whose data were known to be reliable, rather than from the entire number. For the same reason, only the pairs of stations in table 32 numbered 3, 4, 5, 6, 7, 8, 11 and 12 can be fully relied upon as determining the variability of actual temperature differences. The results of pair No. 13 are also undoubtedly reliable for the winter months.

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\* Reducible substantially to Fechner's formula used by Dr. Hann. A strict accuracy would require the probable error of the variability itself to be taken into account, but this is not necessary in the present case.

A glance at the tables suffices to show the great stability of differences between regions as widely separated as the Atlantic Coast and the Great Lakes, or the Coast and the lower Champlain valley; and also, in the case of Cooperstown and Central Park, proves the effect of differences of altitude to be small in Central New York. Thus, while a single normal derived from a record of 38 years is subject to a probable error of 0.6 degrees, a *system of concurrent observations* extending over twenty three years would suffice to reduce the uncertainty of *differences* between even remote stations to about half of that amount.

The case may also be stated thus; adopting 4.0 degrees as the average variability for January, a record of forty-five years is found necessary to reduce the probable error of the normal to 0.5 degrees; whereas, with a variability of differences as great as 1.6 degrees between Central Park and Burlington, only ten years are required to reduce the *relative* error to the same amount.\*

In view of the advantages thus to be derived from the use of a series of records embracing the same years at a large number of stations, an effort was made at the beginning of this investigation to deduce the normals from the first series of regents' observations at the academies of the State during the period 1826-1850. All of the longer records were examined and compared, month by month, and in this manner a large number of errors (many of which are systematic) were detected in the published tables. In a few cases the records proved to be quite satisfactory (notably those of Albany, Kinderhook, and in a lesser degree, Rochester). It is a peculiarity of these early observations, not easily explained, that the mean temperatures for January are almost uniformly too high, in a large number of cases exceeding the values for February. Many of the defects are, no doubt, due to the difficulty of making the first observation precisely at sunrise, and to the variable hour of the last observation, one hour after sunset.†

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\* The above formula may be transformed to  $n = 0.71 \frac{V^2}{R^2}$ ; where  $V$  is the variability,  $R$  is a definite value of the probable error (in this case  $0.5^\circ$ ), and  $n$  is the number of years required to reduce the probable error to the given amount.

† In many cases, irregularities in the temperature records appear to be due to a change of observers.

In the second period of the Regents system of observations, between 1850 and 1868, fixed hours were employed to advantage, and several valuable records have been obtained from this series.

It was finally decided to base the system of normals upon recent observations, in which standard instruments were employed under known conditions of exposure. Continuous records at the stations, Central Park, Cooperstown and Rochester, each covering the period 1871-1891, were used as the standards of the system. All shorter records were compared with these, month by month, and the *relation* between the temperature conditions of the standard and secondary stations thus determined. The normals in the table are then, to be considered as applying to the twenty-one year period, even for observations made prior to 1870, as it was still possible to compare these with the record of Cooperstown.

Several records of great merit are not credited in the table of normals with the full periods over which their observations extend, since the continuity of the series was broken by important changes in the location of thermometers, as became apparent at once upon comparison of successive monthly and annual values with the records of adjacent stations. In nearly all cases of this nature the means given in the table were derived from the later portions of the records.

The results of table 31 show the mean of a twenty-one years period to be liable to a maximum deviation of 0.8 degrees from the true normal. The record of Cooperstown might be considered to afford a basis for the reduction of the whole system to a thirty-eight year period, with a maximum error of 0.6 degrees; but it was deemed best not to attempt this upon the authority of a single record. The twenty-one and thirty-eight years averages for Cooperstown in general show a fairly close agreement; the maximum deviation being 0.9 degrees in May, and that of the annual mean 0.3 degrees.

It will be seen, finally, that a thoroughly satisfactory determination of normals for the entire State can not yet be made. Many important localities are represented by but four years of observation, giving an average *relative* error of from 0.5 degrees to 1 degree for the State at large. The observations now being carried on at numerous stations by members of the State Weather Service may be expected to supply the needed data in the course of a few years.

## AVERAGE RAINFALL.

The average values of rainfall given in table 14 were derived from nearly all available records of a length sufficient to subordinate accidental to permanent features. The monthly and annual totals for each station were examined, and a few obviously incorrect values were omitted from the computations; while records having large systematic differences from those of neighboring stations were rejected altogether, unless all of the conditions attending the observations were known to be satisfactory. In most cases however, the records show a general agreement as to the characteristic features of rainfall distribution over the State and also conform to definite types of annual fluctuation; from which it is concluded that *accidental* errors are not so numerous as to very materially affect the averages. In the majority of cases the observations were made under the direction or general supervision of the Board of Regents or the Smithsonian Institution, and observers were supplied with gauges of a satisfactory pattern.

An estimate of the reliability of *permanence* of the averages of table 24 will be of value here. As the result of an extensive investigation of many hundreds of records obtained from all parts of the world, Mr. A. Binnie of the Institute of Civil Engineers of Great Britain gives the following probable errors of *annual* rainfall averages covering various periods:

The probable error of a 35 years record is 1.78 per cent of the annual amount.

The probable error of a 30 years record is 2.26 per cent of the annual amount.

The probable error of a 25 years record is 2.75 per cent of the annual amount.

The probable error of a 20 years record is 3.24 per cent of the annual amount.

The probable error of a 15 years record is 4.75 per cent of the annual amount.

The probable error of a 10 years record is 8.22 per cent of the annual amount.

These values were generally found to include both irregular and possible secular variations of rainfall. As the uncertainty of *monthly* averages is not given, a rough estimate is here attempted

by the method of variability, as explained in the case of temperature normals. The average deviations of the single monthly values from their means were found to be as follows for the thirty-eight years record of Cooperstown:

The average variability of rainfall for January=34 per cent of the total.

The average variability of rainfall for February=42 per cent of the total.

The average variability of rainfall for June=36 per cent of the total.

The average variability of rainfall for July=32 per cent of the total.

Mean for the four months=35 per cent of the total.

From the mean variability, 35 per cent, the following probable errors of the average monthly values are found by the formula of page 444:

For a 40 years record the probable error of monthly means =6 per cent.

For a 30 years record the probable error of monthly means =6 per cent.

For a 20 years record the probable error of monthly means =8 per cent.

For a 15 years record the probable error of monthly means =10 per cent.

For a 10 years record the probable error of monthly means =12 per cent.

As stated these values are but rough approximations, since the departures from rainfall averages do not fully meet the definition of residuals as employed in the method of least squares.

All records under ten years in length were corrected for the general excess or deficiency of rainfall during their period by comparison with the nearest station having an established normal, no correction being attempted, as a rule, for longer series. A few four and five years averages have been admitted when longer records were lacking, in case the deviation from neighboring stations was of a somewhat constant character; as for example in comparing the rainfall of the Adirondack plateau with that of the Champlain valley, an excess in the rainfall of the former over the latter region was almost uniformly noted in the case of individual months.

# I N D E X .

---

## A.

	PAGE.
Adirondack region described .....	357
"        "    formation of ice in lakes of .....	413
"        "    rainfall over .....	421
"        "    stations of .....	11
"        "    temperature of .....	380
Agriculture, relation of State service to .....	8, 9, 10
Agricultural Department, weather bureau transferred to .....	7, 17
Albany, general climatic data for .....	432
Alfred Centre station described .....	309
Altitude, effect on temperature .....	360
"        "    rainfall .....	419-420
Amplitudes of temperature, daily .....	385
America, temperature on eastern and western coasts of .....	349
Annual march of temperature .....	369
Annual summary and data for 1898 .....	274-289
Anomaly of temperature .....	380
Anticyclones, general account of .....	351
"        effect of, on temperature .....	354
"        monthly summaries of, 1898 .....	80-254
Appalachian system in New York .....	356
Atlantic Coast region, temperature of .....	362
Atlantic ocean as source of vapor .....	353-420
"        temperature of .....	363
Atmospheric pressure. (See Pressure.)	
Arcade station described .....	314
Arkwright station described .....	310
Asia, temperatures of .....	361-362
Autumn, cloudiness during .....	355
"        rainfall during .....	356, 418
"        temperature during .....	355

## B.

Barometers, use of, in State service .....	11
Barometric pressure. (See Pressure.)	
Binghamton station described .....	315
Birds, dates of migration, 1898 .....	71

	PAGE.
Birt, Thomas .....	11
Blodget, Lorin, climatology by .....	384, 434
Brentwood station described .....	325
Brewer, I. W., climatic records by .....	348
Brockport station described .....	387
Brookfield station described .....	317

## C.

Canandaigua lake, opening and closing of navigation .....	412
Canton station described .....	333
Carmel station described .....	328
Cayuga lake, opening and closing of navigation .....	412
Cazenovia lake, opening and closing of navigation .....	412
Central lake region described .....	357
"    "    "    frosts in .....	403
"    "    "    temperature of .....	377
Central New York, rainfall of .....	421
Central office, work of, in 1898 .....	17
Central Station, special equipment of instruments .....	17, 342
Champlain, Lake, dates of freezing .....	406-407
"    "    water levels of .....	407
Champlain valley described .....	357
"    "    temperature of .....	373
"    "    rainfall of .....	420
Chautauqua county grape belt, thermal conditions of .....	371, 403
"    lake, opening and closing of navigation .....	413
Cities, general climatic data for .....	432
Climate related to forest growth .....	440
"    of New York State .....	345-448
Climatic influences of Northern Hemisphere .....	348
Cloudiness, average over New York .....	426-430
"    monthly and annual data for 1898 .....	29-281
"    character of observations on .....	18
Coasts, temperature of continental .....	349
Coffin, J. H., investigation of climate by .....	347, 374
Cold wave warnings, special .....	16
Cold waves tempered by Great Lakes .....	370
Commissioner of Agriculture, letter of transmissal .....	3
Commissioners of Meteorological Bureau, plan of work adopted by .....	10
Constableville station described .....	323
Continents, temperatures on coasts and in interior of .....	349
Cooperstown station described .....	319
Cornell University, central station at .....	17
Counties having meteorological and crop reporters .....	292-296, 297
Crop bulletin .....	14, 300
"    correspondents, list of .....	297

	PAGE.
Crops, condition and growth during 1898 .....	27-276
Cyclones during 1898, summaries.....	80-254
"    effect of, on temperature.....	352, 441
"    character and movement of.....	351

D.

Daily fluctuations of temperature .....	385
Days, frequency of clear, fair and cloudy.....	428
"    frequency of rainy.....	424
"    clear, fair, cloudy and rainy, during 1898.....	28-281
Dew-point, values during 1898 .....	28-259
Director of N. Y. Weather Bureau, letter of transmissal .....	7
"        "        "        establishes State service.....	9
Display stations.....	15
Draper, Dr. Daniel, climatic work of.....	348
Drouths in past years .....	434-440

E.

Eastern Plateau described.....	357
Earthquake, report of. ....	285
Eden Centre station described .....	336
Elevation, decrease of temperature with.....	381
"    of stations, table.....	292-296
Elmira station described .....	311
Erie canal, periods of navigation .....	411
"    Lake, periods of navigation .....	409
Erie, Lake, temperature of.....	369
Europe, temperatures of.....	349, 361
Expenses of State Bureau.....	22
Experimental station, Cornell .....	18
Extremes of monthly and annual temperature.....	382

F.

Farm work, progress of, during 1898 .....	91-254
Financial statement of 1898.....	22
Fleming station described.....	340
Forecasts, dissemination of.....	15
Forests, effect of, on climate .....	440
Freezing of lakes and rivers, dates of.....	405-413
Frosts in New York.....	399-404
"    occurrence of, in previous years.....	434-440
"    during 1898, summaries.....	91-214
Fuertes, E. A., letters of transmissal.....	7, 345
"    "    director of State Bureau.....	345



## G.

	PAGE.
Geneva station described.....	340
Glens Falls station described .....	332
Gloversville station described .....	322
Gradient, temperature .....	360, 380
Grape belt of Chautauqua county .....	371, 408
Great Lakes, thermal influence of .....	367
Great Lake region, frosts in.....	402
“ “ “ topography of.....	357
“ “ “ variability of temperature in .....	398
Green Mountains, effect on climate.....	381
Gulf of Mexico as source of moisture.....	353, 355, 420
Gulf Stream, effect of, on temperature .....	363

## H.

Hail storms during 1898, summaries.....	30-254
Halos during 1898, summaries.....	30-254
Harmonic analysis of temperature .....	369
Harrington, M. W. ....	345
Hazen, W. B. ....	8
Hess Roads station described.....	388
Highlands of New York described .....	356
“ “ thermal conditions of.....	378
“ “ rainfall of.....	420, 421
Historical notices of weather.....	434
Historical review of State Weather Bureau.....	8-12
Honeymead Brook station described.....	327
Hough, F. B., essay on climate .....	347
Hudson river, dates of freezing .....	405, 434-443
Hudson valley described .....	356
“ frosts in.....	401
“ temperature of .....	372-373, 398
“ rainfall in.....	420
Humidity .....	430
“ during 1898, monthly data.....	28-259
“ manner of observing .....	13
Humphrey station described .....	309
Hurlbut, J., climatic data by .....	436
Hurricanes, West India, during 1898.....	175, 214
Hyatt, Dr. James, climatic notes by.....	440

## I.

Ice, formation in lakes and rivers.....	405-413
Inspection of stations.....	14
Instruments supplied to stations.....	12
“ at central office. ....	17
Island temperatures .....	364
Ithaca station described.....	342

## J.

PAGE.

Japan, temperature of .....	361
-----------------------------	-----

## K.

Keuka lake, opening and closing of .....	418
--	-----

## L.

Lebanon Springs station described .....	326
Lakes, period of navigation .....	412-416
Lakes Erie and Ontario, temperatures of .....	368-369
Latitude and longitude of stations .....	292
"    variation of temperature with .....	360
Lockport station described .....	312
Long Island, temperature of .....	364, 398
"    "    rainfall on .....	418
"    "    Sound, notes on freezing of .....	484-486
Lyon Mountain station described .....	321
Lyons station described .....	339

## M.

Mail, amount distributed .....	17
Malone station described .....	334
Maritime temperatures .....	368, 389
Maximum and minimum temperatures in New York .....	392-397
"    "    "    during 1898 .....	27-259
Meteorological instruments .....	12, 17
"    records, criticism of .....	347, 440-448
"    reports, issue of .....	17
"    stations, statistical table of .....	292
Middletown station described .....	317
Military posts .....	347
Minimum temperatures during 1898 .....	27-259
"    "    during previous years .....	392-397
Mohawk valley described .....	357
"    "    temperature of .....	376
Moisture of air, distribution and precipitation of .....	414-482
"    "    during 1898 .....	28-259
Monthly reports, issue of .....	17
Moisture supplied by ocean and Gulf of Mexico .....	355
Mountain chains of New York .....	356
Mount Morris station described .....	312
Myer, Albert H. ....	8

## N.

National Bureau, relation to State Bureau .....	18
"    "    telegraphic forecasts by .....	16
Navigation, periods of, in lakes and rivers .....	405-413

	PAGE.
New England Meteorological Society on sea breeze.....	365
New England, temperature of eastern .....	381
New York city, general climatic data for .....	432
New York Weather Bureau, historical sketch of .....	8-12
"        "        "        transfer to Agricultural Department.....	7, 17
"        "        "        general work of. (See Stations, Reports, Fore-	
casts, Central Office.)	
Nocturnal cooling and valley winds .....	389
Normals of temperature and precipitation .....	358, 414, 440-447
Normals, monthly and annual departures from, during 1898 .....	47-269
Northern or Adirondack plateau described.....	357
Northern New York, temperature of .....	376, 404
North Hammond station described .....	334
Number Four station described.....	323

## O.

Observers, list of.....	292, 297
Ocean as source of rainfall .....	420
"    thermal influence of .....	362
Ohio valley, upper limit of, in New York .....	379
Ontario, Lake, periods of navigation .....	410
"    "    thermal effect of .....	368, 370
Otsego lake, disappearance of ice in .....	412

## P.

Palermo station described.....	338
Peekskill station described .....	330
Perry City station described .....	320
Physical features of New York.....	356
Plateaus, dates of frosts on.....	403-404
"    description of .....	356-357
"    thermal conditions of .....	378
"    rainfall on.....	418-422
Poughkeepsie station described.....	328
Port Jervis station described.....	318
Postmasters disseminate forecasts.....	16
Potsdam station described.....	335
Precipitation, general account of.....	353-356, 414-426
"    normal values of .....	414, 447
"    related to forest growth.....	440
"    data for 1893.....	28-269
"    method of measuring.....	13
Pressure, atmospheric, general systems of .....	350
"    "    data for 1893.....	27-288
(See, also, Cyclones and Anti-cyclones.)	

## R.

	PAGE.
Rainfall. (See Precipitation.)	
Rainy days, average frequency of .....	424
"    frequency during 1893 .....	29-281
Rainy and dry seasons, historical notices of .....	434-440
Ranges of temperature, account of normal .....	387
"    "    during 1893 .....	27-259
Rates of rainfall during 1893 .....	28-259
Regents, New York Board of .....	347, 400
Relative humidity, account of normal conditions of .....	480
"    "    during 1893 .....	28-259
Reports, issue of, during 1893 .....	14, 17
Robins, first appearance, 1893 .....	71
Rochester, general climatic data for .....	433
Rome station described .....	381
Romulus station described .....	341
Rondout station described .....	380

## S.

St. Lawrence river, dates of freezing .....	408
Saranac Lake station described .....	325
Saratoga station described .....	382
St. Lawrence valley described .....	357
"    "    rainfall of .....	353, 418-422
"    "    thermal conditions of .....	418-422
Schott, C. A., meteorological tables of .....	348
Sea breeze, general account of .....	365
Seneca lake, periods of navigation .....	418
"    thermal effect of .....	377
Setauket station described .....	325
Signal officer, chief, aids State bureau .....	9
Signal service, account of .....	8, 347
Smithsonian institution .....	8, 347
Smock, J. C., climatic notes by .....	434
Snowfall, general account of .....	422
"    during 1893 .....	28-109, 281-275
"    historical notices of .....	434-440
South Canisteo station described .....	314
South Kortright station described .....	316
Spring, climatic conditions of .....	354
"    rainfall during .....	419
State weather services, functions of .....	8
"    "    establishment of the several .....	9
State Weather Bureau. (See New York Weather Bureau.)	
Stations displaying forecasts .....	15, 16
"    meteorological, general account of .....	11-14, 17
"    "    statistical table of .....	292
"    "    descriptions of .....	309-343

	PAGE.
Stillwater station described .....	329
Summer, climatic conditions of .....	354
"    rainfall during.....	418
Summaries of weather during 1893.....	27-277
Susquehanna valley, temperature of.....	380

## T.

Telegraphic forecasts .....	16
Temperature, effect of altitude upon .....	360
"    "    latitude upon .....	360
"    annual march of.....	369
"    anomaly of.....	380
"    normal daily fluctuations of.....	385
"    normal daily ranges of.....	387
"    data for 1893 .....	27-288
"    extremes of monthly and annual in previous years. ...	382-384
"    related to forest growth.....	440
"    harmonic analysis of.....	369
"    historical notes of extreme.....	434-440
"    maxima and minima for past years... ..	392-397
"    normals, methods of deriving .....	440
"    "    table of .....	358
"    manner of observing .....	12
"    variability of daily means....	397
"    effect of pressure systems on .....	352, 441
"    of central Lake region.....	377
"    of Chautauqua grape belt.....	371
"    of highlands .....	378
"    of New England .....	381
"    of Mohawk valley .....	376
"    of Northern New York .....	376
"    of St. Lawrence valley .....	374
"    of highland valleys.....	372
"    maritime, table of.....	364
Thermal influence of the ocean.....	362
Thermometers supplied to stations.....	12
Thunderstorms .....	17, 355, 421
"    summaries of, by months, 1893.....	30-254
Topography of New York.....	356
Turin station described .....	324
Turner, E. T. ....	7, 10, 345

## U.

United States Military Posts, records furnished by.....	347
United States Weather Bureau.....	8, 16, 18
Utica station described.....	331

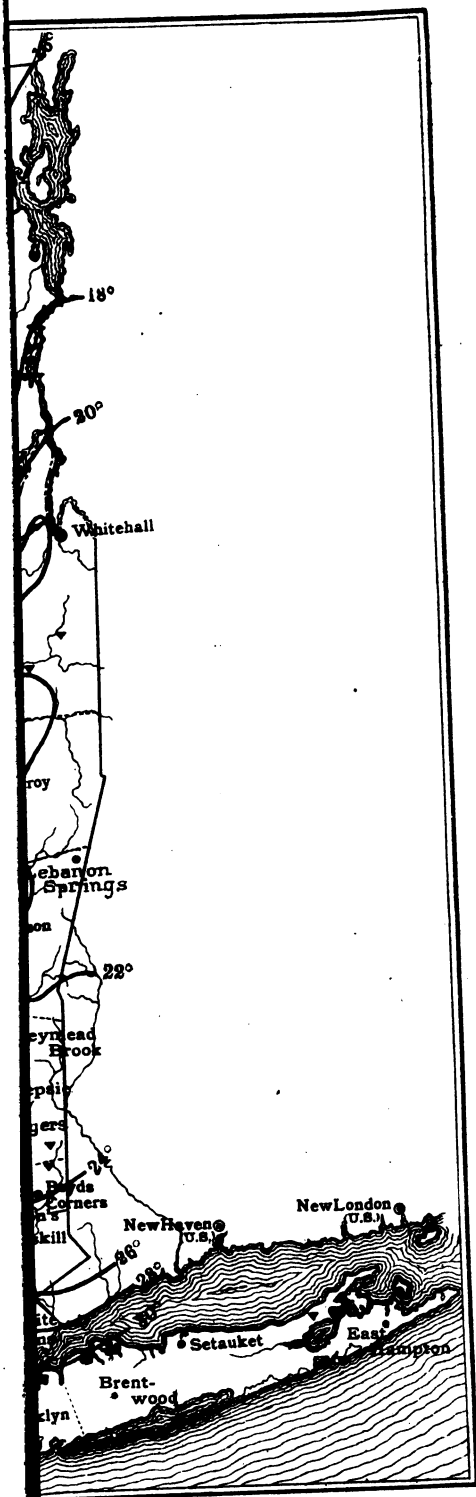
## V.

	PAGE.
Valleys, thermal condition of.....	372, 380
Vapor sources of. ....	419-421
Variability of temperature.....	397-442
Varysburgh station described .....	315

## W.

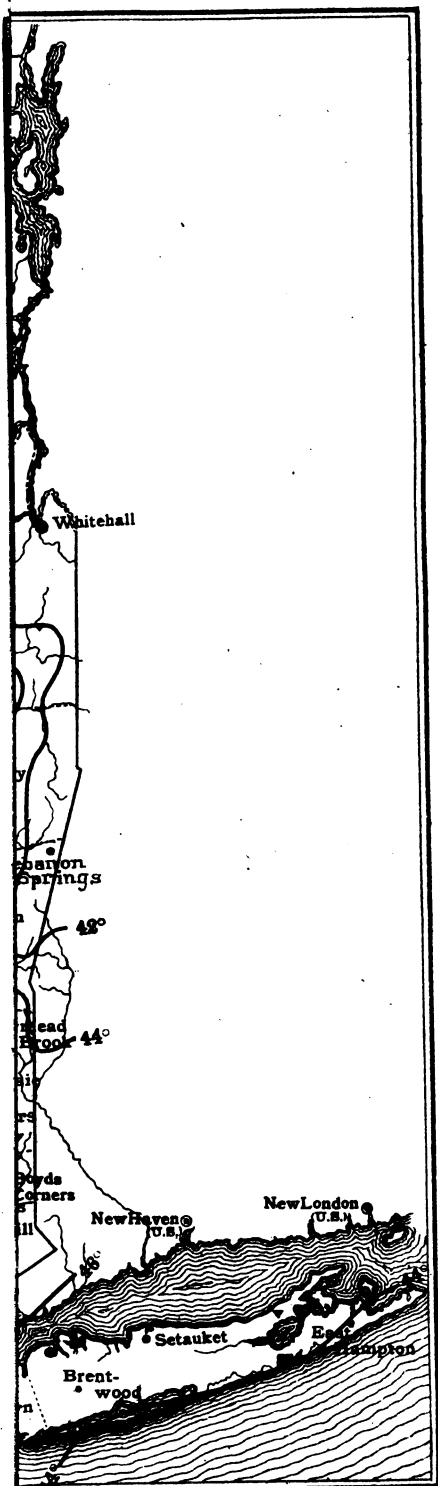
Wappingers Falls station described.....	327
Water temperatures .....	363-368
Waverly station described .....	320
Watkins station described.....	341
Weather Bureau, State. (See New York Weather Bureau.)	
Weather forecasts. ....	15, 16
Weather of New York, summaries for 1898.....	27-257
"        "        historical notices of.....	434
Wedgewood station described.....	313
Western plateau.....	357
Winds, general systems of .....	348-356
"        nocturnal in valleys .....	389
"        relation to precipitation .....	353
"        prevailing, by months, 1893 .....	29-259
"        stations observing .....	12
Winter, climatic features of.....	351
"        precipitation during.....	419
"        historical notices of remarkable.. ..	434-440
Wilson, W. D., climatic studies by.....	377



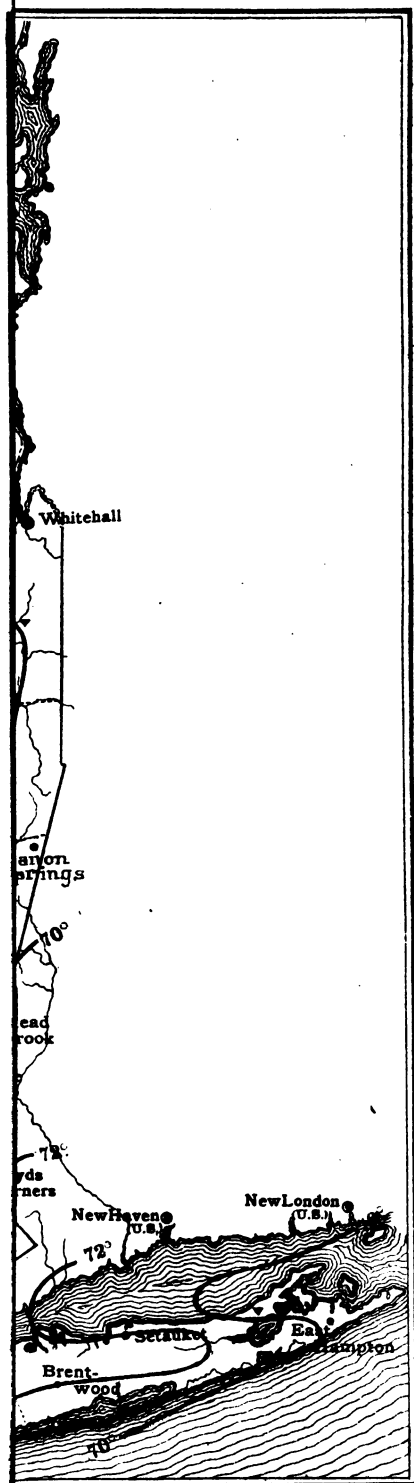




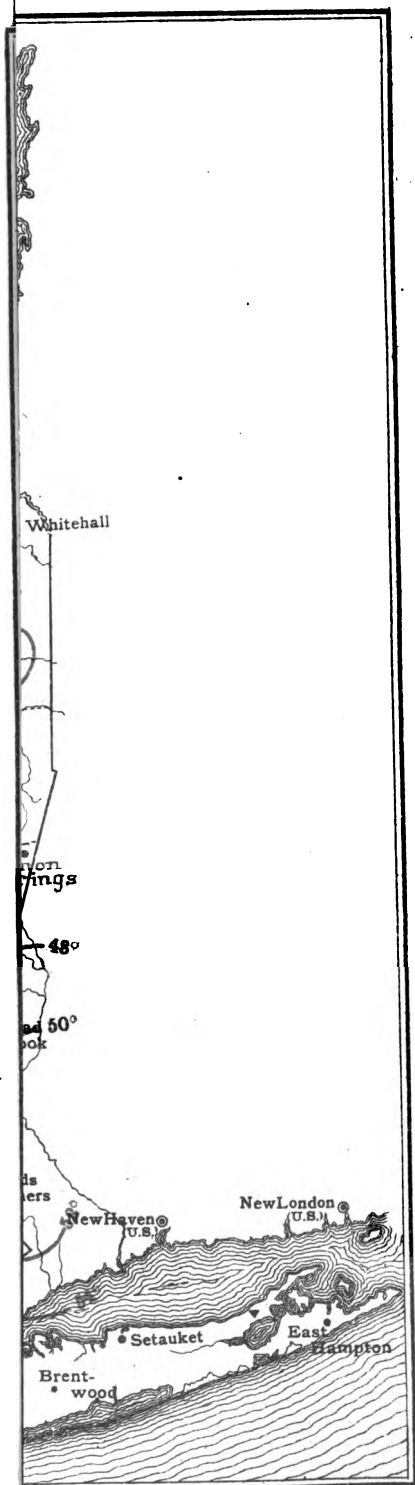




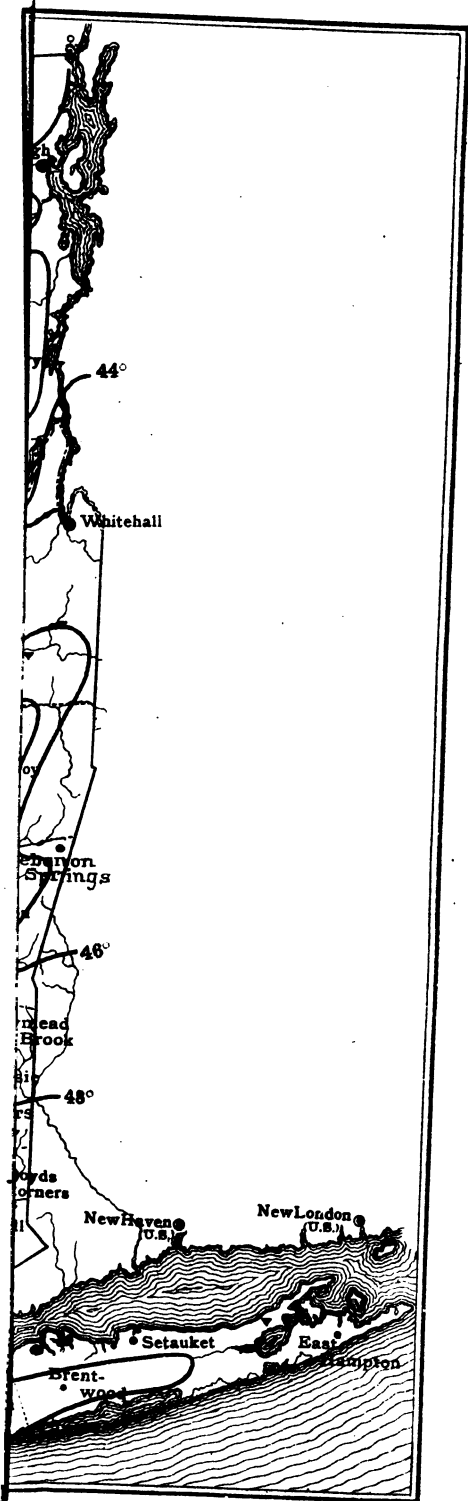






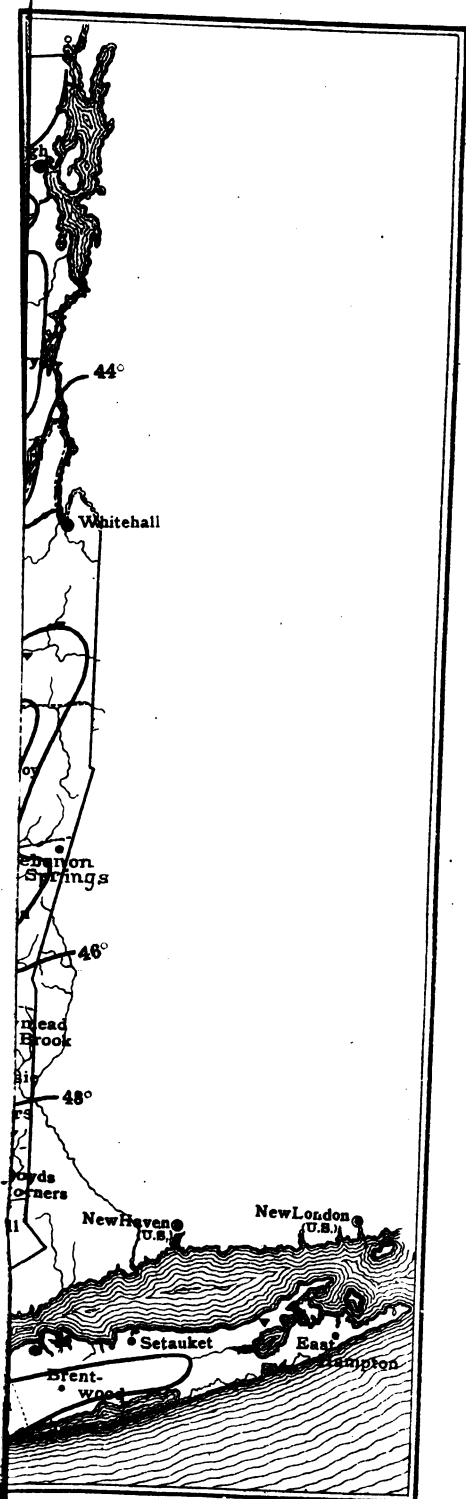








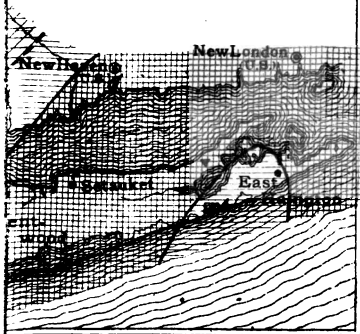
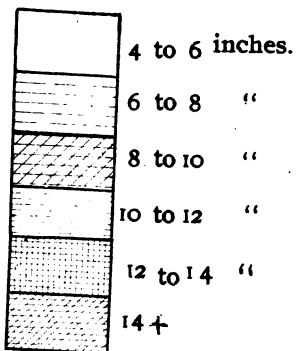






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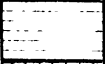
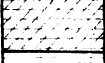
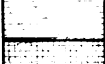


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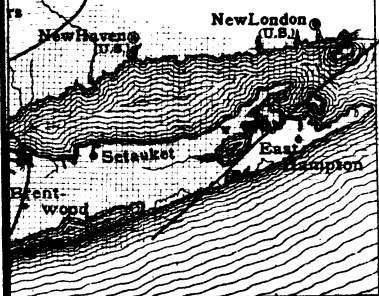


Whitehall

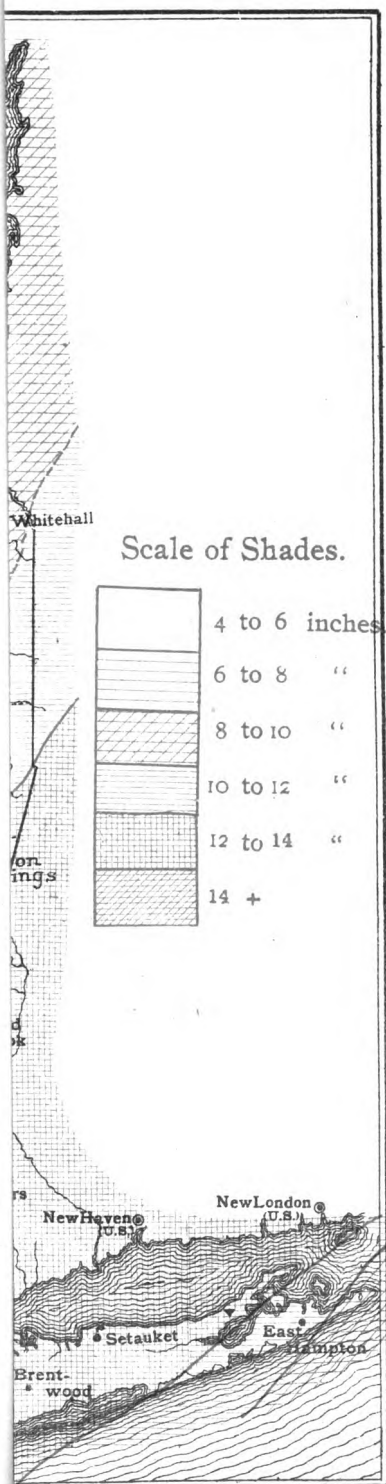
### Scale of Shades.

	4 to 6 inches.
	6 to 8 "
	8 to 10 "
	10 to 12 "
	12 to 14 "
	14 +

St. John's

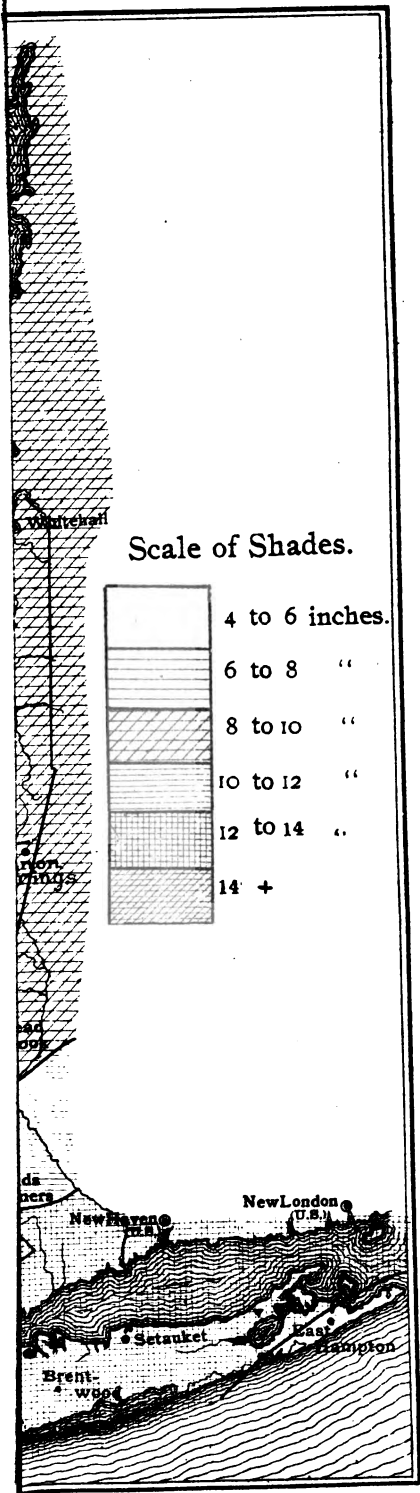








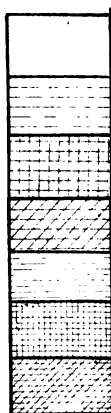






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# Scale of Shades.



25 to 30 inches

30 to 35 "

35 to 40 "

40 to 45 "

45 to 50 "

50 to 55 "

55 to 60 "

